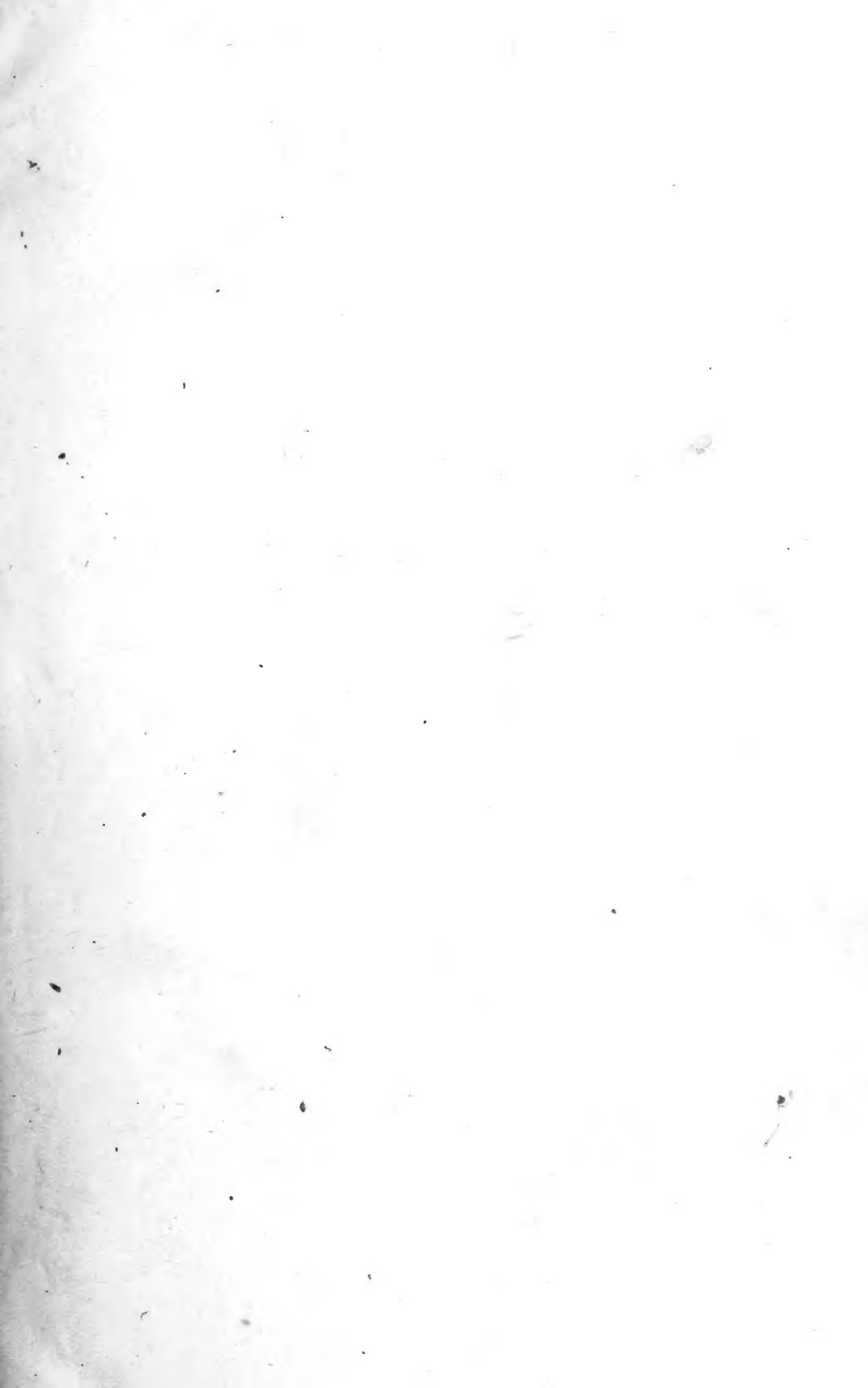


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PREFACE.

IN taking a retrospective glance at the contents of 'The Zoologist' for 1878, it is satisfactory to note that the suggestions made in the Preface to the volume for the preceding year have found favour in the eyes of contributors. Although, as of yore, Ornithology has received a considerable share of attention, other branches of Natural History have not been neglected, and the many interesting observations on Mammals, Fishes and Crustacea which have been recorded during the year 1878 in these pages show how much there was to gather, how much still remains to be gleaned, even in the circumscribed field of British Zoology.

The increased attention paid of late to the Natural History of Ireland has resulted in the discovery there, during the past summer, of two species, the Tree Pipit (p. 348) and the Red-backed Shrike (p. 437), which were not previously known to visit the Sister Isle; while a third species, the Wood Wren (p. 348) has been found to be of more frequent occurrence there as a local summer visitant than has hitherto been shown to be the case.

The exceptional appearance of the American Snow Goose, *Anser albatus*, for at least the second time, in Ireland (p. 419), is a circumstance of no little interest to ornithologists. Nor should Dr. Bureau's valuable paper on the seasonal change which takes place in the bill of the Common Puffin (p. 233) be passed over in silence. The careful observations made by him on this subject have resulted in the elucidation of a very singular metamorphosis, which, if not unsuspected,* has at all events only now, through his instrumentality, been fully realized and understood.

* In Bingley's 'North Wales; including its Scenery, Antiquities and Customs and some Sketches of its Natural History,' published in 1804, an interesting account is given (vol. i., pp. 348—354) of the habits of the Puffin as observed in the island of Priestholme, off the coast of Anglesea, where the author saw "upwards of fifty acres of land literally covered with these birds." After describing both old and young, he remarks (p. 354) that "Puffins do not breed till they are three years old, and they are said to change their bills annually." This statement occurs in nearly the same words in 'A Tour round North Wales,' during the summer of 1798, by the same author, vol. i., p. 309 (1800), where a much briefer account of the Puffin is given, admittedly borrowed from Pennant, who in turn derived his information from the Rev. Mr. Davies, of Aber, sometime resident at Beaumaris.

On the return of the English Arctic Expedition, in November, 1876, several correspondents wrote to express a hope that some account of the Zoology of the voyage might appear in the pages of this Magazine, and it was with great satisfaction that the Editor was able to prevail on Captain Feilden, Naturalist to the Expedition, to give the readers of 'The Zoologist' his "Notes from an Arctic Journal," which are replete with interest and information. These will be continued in succeeding numbers.

On the subject of Provincial Names of Animals, the Editor feels that his thanks are due to the many contributors who, in response to his invitation, have favoured him with local lists, and other information. It is proposed at some future time to amalgamate the lists received, as well those which have appeared as those which are still unpublished, in a way which it is hoped will render them useful alike to naturalists and philologists. The non-appearance for the present of further lists of the kind need not deter those who may have collected any provincial names from forwarding them at their leisure.

The Editor feels that his obligations to contributors would not be discharged without some acknowledgment to those gentlemen who, at a sacrifice of valuable time, have furnished him with Reports of the Meetings of Scientific Societies during the year, and his thanks are accordingly tendered to the Secretaries of the Linnean, Zoological, and Entomological Societies, for their respective periodical communications. These Reports are especially acceptable to those readers of 'The Zoologist,' who, residing at a distance from the metropolis, are prevented from personally attending the Meetings.

While thanking his other contributors for the many interesting communications with which he has been favoured during the past year, the Editor is encouraged to hope that he may rely upon a continuance of their friendly aid.

J. E. H.

1st December, 1878.

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ON THE DISTINGUISHING CHARACTERS OF THE BRITISH CETACEA.

BY THE EDITOR.

It frequently happens that large Cetaceans are unexpectedly cast up on some part or other of our coast, run aground, or are killed within sight of land and towed ashore. Few persons being acquainted with these creatures for want of opportunity to study and compare their various forms, or for want of access to descriptions, the species often remains undetermined until the carcase is cut up, and the various portions of it become dispersed. In this way many a good opportunity of adding to our knowledge of these marine Mammalia is unfortunately lost.

Under these circumstances it has occurred to me that a list of the British *Cetacea*, with a brief enumeration of the distinguishing characters of each, may be of service in assisting in the first instance towards the identification of a species, whose history and perhaps habits, if known, may then be ascertained from other sources. Once the species is made out, it is not difficult, as a rule, to learn more about it. The difficulty at starting is to name it.

At the present day it is perhaps scarcely necessary to observe that Whales and Dolphins, notwithstanding their external appearance and oceanic life, are not fishes, but marine mammals, which bring forth their young alive, and nourish them in precisely the same way as do the terrestrial mammals.

The order *Cetacea* has been divided into two very natural groups—the Whalebone Whales, *Mystacoceti*, and the Toothed Whales, *Odontoceti*.

The former are characterized by the absence of teeth and the possession in lieu thereof of great plates of horny fibre, called “baleen,” depending from the palate, and known as the “whalebone” of commerce. The latter are destitute of whalebone and possess teeth, either in one jaw or both, sometimes few and rudimentary, sometimes numerous, and always single-rooted and similar to one another.

Again, the Whalebone Whales possess olfactory organs, and have a double orifice to the blow-hole; the ribs are very slightly articulated to the vertebræ, and the sternum or breastbone consists of a single piece, which is attached to the first pair of ribs only.

The *Odontoceti*, or Toothed Whales, on the contrary, have no olfactory nerve; a single external orifice to the blow-hole; the anterior ribs more closely united to the vertebræ; and the sternum, which, in the young at least, is composed of several segments, is attached to several of the ribs.

The first group, *Mystacoceti*, may be conveniently divided into two families—the *Balænidæ*, to include the Right Whales; and the *Balænopteriðæ*, to include the Hump-backed Whale and the Rorquals, or Fin Whales.

The second group, *Odontoceti*, have been divided by Professor Flower into three families—the *Physeteridæ*, to include the Cachelots and Ziphioid Whales; the *Platanistidæ*, for the reception of the long-snouted fresh-water Dolphins of India and South America, of which we have no representatives in our waters; and the *Delphinidæ*, to include the Dolphins and Porpoises, with the Narwhal, and the White Whale, or Beluga.

The following Table will convey some idea of the number and variety of the British *Cetacea*, and will at the same time exhibit, to a certain extent, their affinities. The nomenclature adopted is, with a few exceptions, where older names seemed to deserve priority, that of the second edition of Bell’s ‘British Quadrupeds,’ in which work will be found much useful information on the subject of British Whales and Dolphins, and, by way of introduction, an excellent account of their organization.

BRITISH CETACEA.

I. MYSTACOCETI, Whalebone Whales.

FAMILY.	GENUS.	SPECIES.	ENGLISH NAME.
BALÆNIDÆ	<i>Balæna</i>	<i>mysticetus</i> , Linn.	Greenland Right Whale
"	"	<i>biscayensis</i> , Eschr.	Atlantic Right Whale
BALÆNOPTERIDÆ	<i>Megaptera</i>	<i>boops</i> , Fab.	Hump-backed Whale
"	<i>Balænoptera</i>	<i>musculus</i> , Linn.	Common Rorqual
"	"	<i>Sibbaldii</i> , Gray	Sibbald's Rorqual
"	"	<i>laticeps</i> , Gray	Rudolphi's Rorqual
"	"	<i>rostrata</i> , Fab.	Lesser Rorqual

II. ODONTOCETI, Toothed Whales.

PHYSETERIDÆ	<i>Physeter</i>	<i>macrocephalus</i> , Lin.	Sperm Whale, or Cachelot
"	<i>Hyperoodon</i>	<i>rostratus</i> , Chemn.	Beaked Whale, or Bottle-head
"	"	<i>latifrons</i> , Gray	Broad-fronted Beaked Whale
"	<i>Ziphius</i>	<i>cavirostris</i> , Cuv.	Cuvier's Whale
"	<i>Mesoplodon</i>	<i>bidens</i> , Sowerb.	Sowerby's Whale
DELPHINIDÆ	<i>Monodon</i>	<i>monoceros</i> , Linn.	Narwhal
"	<i>Delphinapterus</i>	<i>leucas</i> , Pallas	White Whale, or Beluga
"	<i>Orca</i>	<i>gladiator</i> , Lacép.	Grampus, or Killer
"	<i>Grampus</i>	<i>griseus</i> , Cuv.	Risso's Grampus
"	<i>Globiocephalus</i>	<i>melas</i> , Trail.	Pilot Whale — <i>Calina</i>
"	<i>Phocæna</i>	<i>communis</i> , Cuv.	Porpoise
"	<i>Delphinus</i>	<i>delphis</i> , Linn.	Common Dolphin
"	"	<i>tursio</i> , Fab.	Bottle-nosed Dolphin
"	"	<i>acutus</i> , Gray	White-sided Dolphin
"	"	<i>albirostris</i> , Gray	White-beaked Dolphin

Family BALÆNIDÆ.

Genus *Balæna*, Linnæus.

The members of this genus, which includes the Greenland and Atlantic Right Whales, are characterized by the absence of any dorsal fin, and by having the skin of the under parts perfectly smooth, instead of being pleated or disposed in folds, as in the Fin Whales, or Rorquals. The rostrum of the skull is compressed and rounded, and the rami of the lower jaw strongly arched outwards. The baleen, or whalebone, is long; the flippers short.

Balæna mysticetus, Linn. The Greenland Right Whale.—Averages from 50 to 60 feet in length; has the head very large, and about a third of the entire length; the baleen long; 54 vertebræ and 13 pairs of ribs. The colour a dark grey, with the lower jaw and throat white. It is almost invariably found close to the polar ice-fields, although it occasionally goes as far south in winter as 46° N. lat. Its occurrence on various parts of the coast of Great Britain has been reported, but not satisfactorily proved.

Balæna biscayensis, Eschricht. The Atlantic Right Whale.—Averages from 40 to 50 feet in length, and has a much shorter head than the last-named species, not more than a fourth of its entire length. The baleen is short; the angle of the mouth depressed below the eyes. No description of the skeleton has yet been published. The colour uniform black. In all probability most of the Right Whales which have come into British waters have been of this species, which has a much more southern range than the Greenland Whale.

Family BALÆNOPTERIDÆ.

Genus *Megaptera*, Gray.

Characterized by the possession of a low dorsal fin, and very long flippers (hence the name), the latter about a fourth or even a third of the entire length, with undulating edges. The head is broad and flat; the tail broad and deeply forked. The skin of the throat and belly pleated.

Megaptera boöps (Fabricius). Hump-backed Whale.—The average length of this species is from 45 to 50 feet. It has 53 vertebræ and 14 pairs of ribs. The head is larger in proportion than that of the Rorqual; the tail broad and deeply forked. The skin of the throat and belly is disposed in longitudinal pleats or folds. The general colour is black above, black and white beneath; the flippers entirely white; the baleen black. It is found between 62° and 66° N. lat., whence it moves southwards at the approach of winter. At least two authenticated instances of its occurrence on our shores are on record. One was cast ashore near Newcastle; another was taken in the estuary of the Dee.

Genus *Balænoptera*, Lacépède.

Agrees with the genus *Megaptera* in having a low dorsal fin, and the skin of the under parts pleated; but differs amongst other

respects, in having a more slender body in proportion to the length, very short flippers with their edges even, a smaller and more pointed head, and a shorter tail.

Balænoptera musculus (Linn.). Common Rorqual, Finner, or Razor-back.—Averages from 60 to 70 feet in length, has 61 or 62 vertebræ and 15 pairs of ribs. In colour it is black above, shaded to a brilliant white below; flippers black; baleen slate-colour, streaked with paler shades. It inhabits the more temperate northern seas, with a much more southern range than the Greenland Right Whale, and is the only Balænoid Whale which is found in the Mediterranean. It has been met with on all parts of the British coast. The name "Rorqual" is derived from the Norse "Rorq-val," signifying a whale with pleats or folds in the skin.

Balænoptera Sibbaldii (Gray). Sibbald's Rorqual.—Averages from 60 to 80 feet in length; has 64 vertebræ and 16 pairs of ribs. The head is broad; the flippers long and broad; the dorsal fin very small. In colour it is black above, grey beneath, with whitish spots and markings; the flippers are black above and white below; the baleen uniform deep black. It is frequently met with between 63° 40' and 66° 20' N. lat., and is the commonest Fin Whale about Iceland, where it is found chiefly in summer. Specimens have been procured in Hamna Voe, Shetland, in the Firth of Forth, and elsewhere on the coast of Scotland.

Balænoptera laticeps, Gray. Rudolphi's Rorqual.—Averages from 30 to 40 feet in length; has 58 vertebræ and 14 pairs of ribs. The head is broad; the dorsal fin very small; the flippers short. In colour it is black above, white below; flippers the same; the baleen black. A specimen believed to be of this species was stranded at Charmouth, Dorsetshire, in 1840, and was described by the late Mr. Yarrell in the 'Proceedings of the Zoological Society' for that year, under the name *Balænoptera boöps*. Another was cast ashore on the Island of Islay in 1866, the skull of which is preserved in the Museum of the University of Cambridge.

Balænoptera rostrata (Fabricius). Lesser Rorqual.—The smallest species of the genus, averaging from 25 to 30 feet in length, and having 48 vertebræ and 11 pairs of ribs. The dorsal fin is much more developed than in the last-named species, and, although the general colour is the same, the flipper in this species is black, with a broad white band across it, which seems to be a constant peculiarity, and affords a good mark of distinction. It inhabits the

North Atlantic and Arctic Oceans, and appears regularly in Davis Straits, and on the coasts of Iceland, Greenland, and Norway. It has been met with also off Kamschatka, the Aleutian Islands, and Labrador. The stragglers which have accidentally reached the British Islands have been found chiefly off the eastern coasts of Scotland and England; but solitary specimens have been procured also on the coasts of Cornwall, Lancashire, and Ireland.

Family PHYSETERIDÆ.

Genus *Physeter*, Linnæus.

This genus, to which the Common Sperm Whale belongs, is characterized by an enormous head, the length of which is about one-third of the entire length of the animal; no distinct dorsal fin; and teeth instead of whalebone. In the upper jaw the teeth are generally rudimentary or absent; but in the lower jaw they are numerous, large, and conical.

Physeter macrocephalus, Linn. Sperm Whale, or Cachelot.—Averages in length 60 to 70 feet (the female smaller), and has 50 vertebræ and 10 pairs of ribs. The head is of enormous size, and composed for the most part of cavities divided by a cartilaginous substance and filled with an oily fluid, which in its congealed state forms the spermaceti of commerce.* The snout is abruptly truncated, and above it, and a little to the left, is a single blow-hole. The upper jaw overhangs the under one by some four or five feet. Although there is no distinct dorsal fin, there is a marked protuberance not far from the tail. The colour is black above, shaded to grey beneath. It is native of the tropical and warmer temperate latitudes, from which it occasionally wanders both northwards and southwards. Several specimens have been secured at various times on the east coast of Scotland, and on the coasts of Yorkshire and Kent.

Genus *Hyperoodon*, Lacépède.

This genus is distinguished by the peculiar shape of the head, which is rounded in front, with a projecting beak and comparatively small gape; the skull with two large bony crests on the upper surface of the maxillaries; no teeth in the upper jaw, and those in

* These cavities are quite distinct from that of the cranium, which is situate beneath.

the under jaw are rudimentary and concealed by the gum. The dorsal fin is small and the flippers short and rounded.

Hyperoodon rostratus (Chemnitz). Common Beaked Whale, or Bottle-head. Attains a length of from 20 to 25 feet. The beak is depressed and pointed, with a single blow-hole, crescentic in shape, concave in front. The maxillary crests are narrow, widely separated, and not higher than the occipital portion of the skull. The general colour is black above, shaded to grey beneath. This whale is a native of the North Atlantic, and in autumn frequently comes into British waters, specimens being captured nearly every year on some parts of our coast.

Hyperoodon latifrons, Gray. Broad-fronted Beaked Whale.—Attains a length of 25 to 30 feet. Differs from the last-named chiefly in the shape of the skull; the bony crests on the maxillaries are much thickened and flattened above so as almost to touch one another, and rise above the occipital portion of the skull. Nothing is yet known of the external appearance of this whale, which has been described only from its remains, portions of which have been found in Orkney, the Firth of Forth, and Morecambe Bay, Lancashire.

Genus *Ziphius*, Cuvier.

Characterized by the peculiar conformation of the skull. The rostrum is triangular in shape, at the base of which is a deep hollow into which the nares open. There are two teeth in front of the lower jaw, conical in shape, and of moderate size.

Ziphius cavirostris, Cuvier. Cuvier's Whale.—Although apparently not uncommon in the Mediterranean, is only known to have occurred once in British waters, a specimen having been taken in Hamna Voe, Shetland, in 1870, as recorded by Professor Turner, of Edinburgh.* It attains a length of about feet, and has vertebræ and pairs of ribs. Its colour is said to be steel-gray, with irregular white streaks.

Genus *Mesoplodon*, Gervais.

Distinguished from the last-named genus by the form of the skull, which has no hollow at the base of the rostrum (the latter being very slender), the nares opening directly on the surface. The teeth, two in number, which in *Ziphius* are situated in front of the lower jaw, are in this genus placed one on each side of the

* Trans. Roy. Soc. Edinb., 1872.

lower jaw at the same distance from the front, and are compressed rather than conical.

Mesoplodon bidens (Sowerby). Sowerby's Whale.—Average length from 15 to 18 feet, with 38 vertebræ and 10 pairs of ribs. The front slopes gradually to the beak. The front slopes gradually to the beak; the upper jaw is shorter and narrower than the under one, the projecting teeth on each side of the lower jaw being visible externally. The dorsal fin small; flippers the same. In colour it is described as black above and white below, the sides marked with vermicular white streaks. This species was first described by Sowerby from a specimen 16 feet in length, which was cast ashore in Elginshire. Since then others have been taken on the coast of Kerry and elsewhere in Ireland. Nothing is yet known of its distribution and habits.

Family DELPHINIDÆ.

Genus *Monodon*, Linnæus.

No dorsal fin and very small flippers. Head raised, with a small mouth and no beak. Two teeth in the upper jaw only. These are rudimentary and concealed by the gum in the female, but in the male, one (the left) is projected forward, in the shape of a long straight tusk, half the length of the body.*

Monodon monoceros, Linn. The Narwhal.—Averages 14 to 16 feet in length, with a single straight tusk 7 or 8 feet in length. In colour it is grey above, mottled with black; and white beneath, spotted with grey and black. Its usual haunts are between 70° and 80° N. lat. Three instances are on record of its occurrence on our coasts, namely, in Shetland, in the Firth of Forth, and near Boston, Lincolnshire. The word "Narwhal" signifies the Beaked Whale, from the Gothic *nar*, Icelandic *ner*, the beak.

Genus *Delphinapterus*, Lacépède.

Agrees with *Monodon* in having no dorsal fin, small flippers, a small round head, and no beak; but differs from it in having teeth in *both* jaws, none of which are prolonged externally. The tail is broad and powerful.

Delphinapterus leucas (Pallas). White Whale, or Beluga.—Attains a length of from 10 to 16 feet, and has 50 vertebræ and

* Occasionally, though rarely, both tusks are thus developed. There is a specimen in the Cambridge University Museum with two tusks, the left measuring 6 feet 7 inches, the right (which has been broken) 6 feet 1 inch.

10 pairs of ribs. The teeth, which are present in both jaws, vary in number from 8 to 10 on each side, and are conical in shape and often truncated. In colour it is entirely white, sometimes with a yellowish tinge. The White Whale is common in the White Sea, in Hudson's Bay, Davis Straits, and the Arctic Ocean generally, and is only accidentally found so far south as the British Islands. A few have been met with off the coast of Scotland and in Orkney. The name "Beluga" is said to be of Russian origin, being derived from "beloe," which signifies white.

Genus *Orca*, Gray.

The members of this genus are distinguished by their round head; large, conical and slightly curved teeth; high dorsal fin; flippers broad and oval; and tail broad and powerful.

Orca gladiator (Lacépède). Grampus, or Killer.*—Length about 20 feet; 50 vertebræ and 11 or 12 pairs of ribs. The upper jaw is slightly longer than the under one; the blow-hole crescentic, concave in front. The teeth, which are present in both jaws, vary from 11 to 12 on each side, and are large, conical, and slightly recurved. In colour it is glossy black above, pure white beneath, a sharp line of demarcation between the two. Above each eye is a white spot. The Grampus seems to have a wider geographical range than most of the *Cetacea*, having been met with from Greenland to the Mediterranean. Numerous specimens have been brought ashore on different parts of the coast of Scotland and England. Its voracity is astonishing, and examination of the contents of the stomach of different specimens has shown that it preys largely on seals and porpoises, and even kills and devours the White Whale.

Genus *Grampus*, Gray.

Although agreeing with *Orca* in the rounded head, high dorsal fin and large flippers, this genus is distinguished by having no teeth in the upper jaw at any age, while those of the lower jaw are few and all placed in front. The flippers, moreover, although large, are long and narrow, and placed low down. The tail is not nearly so large and broad as in *Orca*.

Grampus griseus (Cuvier). Risso's Grampus.—Attains a length of about 10 feet, and has 68 vertebræ and 12 pairs of ribs. The

* "Grampus," from *Grand-poisson*. Called "Killer" in allusion to its carnivorous habits.

forehead is rounded, and the thick projecting upper lip is separated by a hollow from the convexity of the head. The teeth, which are confined to the lower jaw, vary in number from three to seven on each side, and are all placed in front. As regards the ground colour, Risso's Grampus is very variable, being either black above and white below, or grey, passing into black above and white beneath; but it may always be distinguished by the curious way in which this ground colour is marked and covered with irregular lines and narrow streaks and spots of white. It is a rare animal, and nothing is yet known of its distribution and habits. Three specimens only have been obtained on the south coast of England.

Genus *Globiocephalus*, Lesson.

With the last-named genus the present agrees in having a rounded head, no beak, and long narrow flippers; but differs in the shape of the dorsal fin, which is long and low instead of high, and in the teeth, which are large and numerous in both jaws.

Globiocephalus melas (Trail). Pilot Whale, Ca'ing, or Driving Whale.—Averages from 16 to 20 feet, and has 56 vertebræ and 12 pairs of ribs. The jaws are short, the upper one being somewhat longer than the under one. The teeth, of which there are about 24 on each side in both jaws, are large and conical. The colour is deep black above and white below, terminating in a white heart-shaped spot on the throat. It is a native of the northern seas, but goes at least as far south as the Mediterranean, and occasionally visits our shores in some numbers.

Genus *Phocæna*, Cuvier.

This genus, which has most of the characters possessed by the two last-named genera, differs chiefly in regard to its teeth, which are present in both jaws, and are compressed, spatulate and truncated.

Phocæna communis, Cuvier. Porpoise.*—Average length 4 or 5 feet, with 65 vertebræ and 13 pairs of ribs. The lower jaw is slightly longer than the upper one. The teeth vary in number from 20 to 26 on each side in both jaws, and, as above stated, are compressed, spatulate and truncated. In colour it is black, or dusky, above, gradually shaded into white beneath. It inhabits the North Atlantic, but is seldom found far from land, and is the

* "Porpoise" from *Porc-poisson*. Often called "Hog-fish" by English sailors.

commonest of all the *Cetacea* which visit the coasts of Great Britain.

Genus *Delphinus*, Linn.

In some respects not unlike *Phocæna*, but distinguished at once by its head, which, instead of being rounded, has a prolonged beak,* and double the number of teeth.

Delphinus delphis, Linnæus. Common Dolphin.—Exceeds the Porpoise in size, attaining a length of from 6 to 8 feet. The vertebræ vary from 70 to 75 in number. The jaws are long and powerful, the lips thin and compressed. The teeth, of which there are from 40 to 50 on each side of both jaws, are acute and slightly curved, and those in the upper jaw fit very regularly between those in the lower. The colour is black, gradually shaded through grey on the sides to pure white beneath. The Common Dolphin appears to have a much more extensive range than the Porpoise, being found in the more temperate regions on both sides of the North Atlantic and in the Mediterranean. It is by no means uncommon off our own coasts, and is not unfrequently captured in fishermen's nets.

Delphinus tursio, Fabricius. Bottle-nosed Dolphin.—Much larger than the common species, averaging from 8 to 12 feet, but with not much more than half the number of vertebræ (41) and half the number of teeth (20 to 25 on each side of both jaws). The beak is shorter than in the last-named species, as also are the dorsal fin and flippers. The name "Bottle-nosed" has been bestowed from the shape of the skull.

Delphinus acutus, Gray. White-sided Dolphin.—About equal in size to the Common Dolphin, averaging from 6 to 8 feet in length, but with a larger number of vertebræ (80 or 82) and a smaller number of teeth (28 to 36 in each side of both jaws). It may be distinguished at a glance by its colour. It is black above and white beneath, like its congeners; but the flanks are yellow or brownish grey, with an oval white patch in the centre, which gives it a marked appearance. Two or three specimens only of this rare species have been captured in the Orkneys.

Delphinus albirostris, Gray. White-beaked Dolphin.—Averages 7 to 9 feet in length, with 88 or 90 vertebræ and 15 pairs of ribs. The beak elongated and gradually tapering to the extremity. The

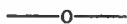
* The French sailors sometimes call the Goose-beak "*Bec d'oie*."

teeth are small and curved, and vary in number from 23 to 25 on each side of both jaws. This species, like the last-named, is easily distinguished by its colour, which is deep purplish black above; while the nose and a well-defined line along the upper jaw, as well as the whole of the lower jaw and belly, are cream-colour, varied in parts with chalk-white, which contrasts finely with the deep black colour of the back. This Dolphin also inhabits the North Atlantic, but does not appear to be common. Only three or four specimens have been met with on the east coast of England.

It is not a little remarkable that the number of species of Whales and Dolphins which have been ascertained to have occurred on the coasts of Great Britain and Ireland is in excess of what has been recorded for the European Continent. This, no doubt, is owing to the fact of their remains having been more carefully collected and identified, and more attention given to the study of these animals by English than by continental naturalists.

The late Dr. Gray, who made a special study of the order *Cetacea*, published several articles on the species frequenting or occurring in the British Islands, to which the reader should refer. In 'The Annals and Magazine of Natural History' for 1846 (vol. xvii., p. 82), he gave a list of the British *Cetacea* containing seventeen species which he had the opportunity of personally examining, either entire or in osteological fragments sufficient to enable him to determine them. In the 'Proceedings of the Zoological Society' for 1847 (p. 117), he printed some additional observations on the subject; and in the volume of 'Proceedings' of the same Society for 1864, he published a paper "On the *Cetacea* which have been observed in the Seas surrounding the British Islands," in which he attempted to condense all the original matter in the various antecedently published works on the British Whales and Dolphins, and gave the results of his examination of all the specimens he could collect. This paper is illustrated with figures of the more characteristic bones. In 'The Zoologist' for 1873 (pp. 3357—3364 and 3421—3433) he published a "Catalogue of the Whales and Dolphins inhabiting or incidentally visiting the Seas surrounding the British Islands." To all of these articles, as well as to the more recent papers and monographs by Prof. Flower in the 'Proceedings' and 'Transactions' of the Zoological Society, the reader would do well to refer. Nor

should we omit to indicate as special sources of information the "Recent Memoirs of the *Cetacea*," edited by Professor Flower, and published by the Ray Society, and Professor Van Beneden's 'Osteographie des Cétacés;' while the excellent chapters devoted to British Whales and Dolphins in the second edition of Bell's 'History of British Quadrupeds' afford an amount of information not elsewhere to be obtained in so concise a form.



ON A SPECIMEN OF THE BEAKED WHALE RECENTLY KILLED IN THE MENAI STRAIT.

BY HENRY LEE, F.L.S., F.Z.S.

THE Ziphioid Whales, to which group the present species belongs, occupy an intermediate position between the Cachelots and the Porpoises and Dolphins, and are distinguished from other toothed whales by many important structural differences.

"In the upper jaw there are no functional teeth, which are only occasionally represented by rudiments which never cut the gums, while those of the lower jaw are reduced to either one or two pairs, which are often greatly developed, but sometimes remain almost rudimentary. The snout is produced into a more or less distinctly marked 'beak,' the flippers are short and rounded, and the dorsal fin placed very far back. The blow-hole is crescentic, and two diverging furrows in the skin of the throat assume the form of the letter V with its angle directed forward."*

Four genera are recognized by Professor Flower, in his memoir on this group of whales,† of which the first and best marked is that now under notice, *Hyperoodon*.

This genus is characterized by its rounded forehead, distinct beak, and comparatively small mouth, and especially by the presence of two bony crests on the upper surface of the maxillary bones of the skull, which rise nearly as high as the occipital portion.

In the present species these raised crests are sharp-edged above, and separated by a considerable interval. In an allied species, *Hyperoodon latifrons* (Gray), they are much thickened

* Bell's 'History of British Quadrupeds, including the Cetacea,' 2nd ed., p. 421.

† Trans. Zool. Soc., 1872, pp. 203—234.

and flattened above, so as almost to touch one another. Figures of the skulls of both are given in Bell's 'British Quadrupeds,' 2nd ed., pp. 424, 427.

The genus is further characterized by the rudimentary appearance of a single pair of teeth in the lower jaw, and by the condition of the palate, which is covered with hard tubercles.

The presence or absence of teeth in the Beaked Whale has been not unfrequently disputed, from the fact of their being often so covered and concealed by the gum as to lead an ordinary observer to suppose that they were absent; and although this species of whale is not so rare as many others which are included in the list of British *Cetacea*, those who have opportunities of examining specimens do not always take the trouble to note the result of such examination. It may therefore be desirable to place on record the following observations.

On the 15th September, 1877, I received information from Dr. Robert Brisco Owen, of Beaumaris, that late on the previous Tuesday evening (September 11th) the Menai Strait had been visited by a female whale, which he thought must be a Beaked Whale, or "Bottle-nose." She was entrapped among the rocks at Penmon, and was shot by some of the quarrymen there. Although several rifle-balls passed through her body they were not immediately fatal, and the men said that for some time "she fought desperately with her tail." She was eventually killed, and towed by a boat to Penmon Pier, about a mile distant, thence taken to Bangor on a timber-waggon, and there publicly exhibited.

The measurements taken were as follows:—

	Feet.	Inches.
Total length - - - -	24	—
Greatest girth - - - -	12	6
Height of dorsal fin - - -	1	4
Length of pectoral fins - -	2	—
Diameter of caudal fin - -	8	—
Length of snout - - - -	2	—

From Dr. Owen's description, and from a photograph which he kindly sent me, I was enabled to identify the whale as the Beaked Whale, *Hyperoodon rostratus* (*H. butskopf* of Lacépède), an identification which was confirmed by Professor Flower, whom I consulted. It was represented in the photograph as it lay on

its side on the waggon under a tent. Its great weight—said to have been five tons—was shown by the depth to which the wheels of the waggon had sunk in the ground. The under part of the body was exposed to view, and the two remarkable diverging furrows in the throat which are characteristic of the species were plainly shown.

This whale is also known as the "Two-toothed Whale," the name *Delphinus bidentatus* having been given to it by Hunter, from its having two teeth in the extremity of the lower jaw. This title has, however, led to much confusion in the identification of this species, because these two teeth are permanently concealed by the gum, and only become apparent when that is removed. Hence the discrepancies which exist between descriptions from skeletons and from examples in the flesh.

The specimen in question having been exhibited at Bangor until decomposition had become conspicuous, was taken back to Penmon, and placed upon the shore there. The quarrymen who captured it, after having removed the blubber, which produced about 1500 lbs. of oil, dragged the carcase lower down the beach, thinking that the action of the water would clean the skeleton. There it was allowed to lie, and as its position was beyond low-water mark of any but low spring tides, Dr. Owen was for a long time unable to examine it. But on my directing his attention to the interest attaching to the two rudimentary teeth, he succeeded in obtaining possession of the lower jaw, which was exactly four feet in length. He was at first inclined to think that the teeth mentioned did not exist, but having cleared away the gum from his specimen he came upon the two teeth, which were near the point of the rostrum, and were as sharp as needles and as pointed. Until he had removed the whole of the gum with boiling water they were quite invisible. They were carefully preserved *in situ*, and not removed from their sockets.

The statement made to Dr. Owen, that two or three other whales were in company with the female specimen killed, is interesting. As this is not a gregarious whale, her companions were probably a male and a young one. I am informed that a small whale was cast ashore at Carnarvon a few days afterwards, but I have been unable to obtain any particulars concerning it.

ON THE APPEARANCE AND BREEDING OF *PASTOR ROSEUS* IN THE PROVINCE OF VERONA.

BY EDOARDO DE BETTA,

Member of the Royal Venetian Institute.*

[The following is the concluding portion of a memoir entitled “Le Cavallette e lo *Storno roseo* in Provincia di Verona nell’ anno 1875,” read at a meeting of the Royal Venetian Institute of Sciences, Letters and Arts, 29th of November, 1875, and printed in the ‘Atti’ of that body (vol. ii., ser. 5). The former part, relating to a wonderful and destructive visitation of Locusts—with which, in popular estimation, the appearance of the Rose-coloured Starlings was connected—we have been compelled for want of space to omit. The reader will do well to compare the following interesting account with that given by the Marchese O. Antinori, and translated by Mr. Sclater for ‘The Zoologist’ in 1857 (1st series, pp. 5668–5672).—ED.]

THE Rose-coloured Pastor, *Pastor roseus*, is a most formidable enemy of locusts. It has been asserted† that as its occurrence is deemed in many countries no fallacious indication of their appearance, so on any arrival of such a scourge, these birds are seen by the hundred or the thousand to follow the hordes which devastate the country.

Without wishing to believe that this was our case,—that is to say, that to the invasion of the locusts was solely due the arrival, as before stated, of the Rose-coloured Starling in the Veronese Province, and especially at Villafranca,‡—I believe I shall not be far from the truth in thinking that the presence of the *Acridium* in the interior of the country, and in quantities so immeasurable, determined the stay here of the numberless troops in which these wandering birds reached us, having been originally perhaps more likely directed towards another part of Europe.

Whatever we may think, however, it was a sufficiently strange fact, at which all naturally marvelled, that at the very time of the invasion of the locusts there should appear so great a number of Rose-coloured Starlings as we believe could not be reckoned at less than from twelve to fourteen thousand individuals,

* Translated by William Long, F.S.A., and communicated by the Rev. A. C. Smith, M.A.

+ Brehm, ‘La Vita Degli Animali’ (Italian translation), iii., p. 324.

‡ The chief town of the administrative district, on the Verona and Modena Railway, 17 kilometres from that city.

and perhaps even more, if we are to credit the statements of some of the inhabitants of Villafranca. Nor ought we to be surprised that some attributed this to a miracle, and recognized in it the direct hand of Providence.

As is known, *Pastor roseus* inhabits the warm countries of Africa* and Asia, and is pretty well distributed over all the regions of the Caucasus. Essentially a wandering bird, it migrates more or less regularly to the South of Europe. It has been many times observed in Greece, and more rarely in Spain, France, Belgium, Germany, Switzerland and England. In Italy this very beautiful bird shows itself rarely enough, and is of irregular passage, though it may now be said that some individuals at more or less lengthened intervals have been taken in nearly every part of our country.

As regards the Province of Verona, it is particularly noticeable that *Pastor roseus* figures among the rarer species, many years sometimes passing without an example being even seen; or else showing itself in little parties of from six to ten or twelve, in May or June, and staying but a very few days. It was therefore quite exceptional that, in June, 1870, a hundred or more wandered for about a week in the country along the Veronese shore of the Benaco [Lago di Garda].

This being premised, the scientific interest of the notes now given will be more easily understood. They refer to the appearance, and more especially to the nidification and propagation of *Pastor roseus*, a subject with which modern authors are not much acquainted, and the statements made with regard to the reproduction of this bird in Italy may hitherto be regarded more as suppositious than anything else.

Thus the illustrious Savi (Orn. Tosc. i. p. 180; Orn. Ital. i. p. 354) was only able to announce, on the testimony of others, the nidification of many Rose-coloured Starlings in the Mugello in 1740, concluding his account with the remark that the propagation of this species is "little known." So, too, wrote Perini (Orn. Veron. p. 118), when he said we might infer that a certain pair had bred in the Province of Verona in 1840, from the fact of his having in his possession a female in which perfect eggs were found. Lastly, Salvadori ('Fauna d'Italia,' Uccelli, p. 167) considers the occasional breeding of some pairs is possible, from the fact of his having seen several very young examples taken in Piedmont in September.

* [This is a mistake.—ED.]

I must not omit one more notice by Prof. Pellegrini, who was assured that a pair nested in 1873 near Recoara, and that the nest was found and taken with the young.

But, after all, it is clear that this is the first time in which the Rose-coloured Starling has bred in Italy in such a way and in such large numbers as was exhibited this year at Villafranca. It will be most useful, and not less needful, for me to set forth as succinctly as possible all that I have been able to collect from trustworthy testimony, or that I have myself observed in frequent and repeated excursions from Verona with the same object.

The arrival of *Pastor roseus* at Villafranca happened on the 3rd June. About four o'clock in the afternoon of that day a small flock of from eighteen to twenty of these birds alighted on the high and ruined walls within the castle, and was followed in about half an hour by another flock of about one hundred, which by their continuous cries attracted the attention of all the people dwelling in the castle precincts. In a short time some country people assembled at the place, and soon witnessed another greater sight, for towards evening appeared many thousands of these Starlings which, joining with the first comers, stopped there till dusk, when all left the place they had visited, and dispersed in very numerous troops over the open country. It is easier to imagine than to narrate the discussions held on that day, and the astonishment of the inhabitants, who were greatly vexed at the sudden loss of these beautiful but unknown birds which had just for the first time met their sight.

But things did not thus continue, for towards 3 A. M. of the next day the inhabitants of Villafranca were unexpectedly awakened by the deafening cries of from twelve to fourteen thousand Rose-coloured Starlings which at that hour arrived there, so as to take absolute possession of the castle. A Veronese periodical ('L'Arno,' No. 147, 4th June, 1875) wrote on this subject that the Starlings covered the walls in such excessive numbers as to make them seem alive, and completely black in colour.

From this moment another sight presented itself to the bystanders, for the new-comers without delay began an angry war against the other birds which had their ordinary abode in the castle—Common Starlings, Swallows, Sparrows and Pigeons. These last were soon compelled to retreat to the higher towers. All the others were put to flight after a long and obstinate contest, which again was followed

by another, not less obstinate, between the Rose-coloured Starlings themselves. The reason of this was that they had to fight for possession of one or other of the hundreds of holes and cavities in which the pairs might lodge. The holes being insufficient to harbour them all, by far the greater number were compelled to occupy the roofs of the houses over half the district,—that is, of the part situated between the castle and the church,—and then renewing the fight by driving away the Common Starlings and Sparrows.

Here, too, was soon a new cause for astonishment in the incredible anxiety and activity with which the Rose-coloured Starlings remaining in the castle precincts gave themselves up to cleansing the captured holes and fissures. These they very soon cleared of every encumbrance by rolling to the foot of the wall stones (even of great weight), bits of rock or brick, sticks, straws, skulls, and other portions of the skeletons of animals which had died there naturally, or had doubtless been the victims of Polecats (*faine*) and Owls.

The cleaning completed, the work of nest-building began with daybreak on the 5th June. Here I will remark that the nests occupied both the length and breadth of the whole available site, and that—roughly composed of small sticks, little branches, straws, hay, grasses, and other dry herbs, the whole disposed in a shapeless mass—they presented in their midst a limited hollow space to contain the eggs, and this was irregularly lined with herbaceous fibres, leaves, mosses and feathers.

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It was not until the 17th June that I was able to ascertain for certain that eggs were laid in any nest. They were from five to six in number, and of an ovato-conic form, with a very brittle shell, and of an uniformly white colour, with a slight greenish tint.

On the 10th July the young were completely covered with feathers, and their ultimate development was so rapid, that on the 14th they were all seen to emigrate with their parents from Villafanca, taking a direct course towards Gazòl, Palù, Teze, and Isola della Scala, to continue thence, by short journeys towards the south, their emigration to other lands. One of the young birds killed on the 14th I made a point of having preserved, and presented to the museum of this Institute.

Not to omit any notice of the habits of a bird about which so little is known, I subjoin my observations as follows:—

Pastor roseus, like the Common Starling, is one of the most sociable and cheerful, merry and lively birds. Always busy and restless, it may be seen running here and there, accompanying every movement with its cries. The song of the male is a continual chatter (*cicaleccio*), mixed with harsh and disagreeable sounds. Both one and the other begin in the early morning, continuing for a length of time, and renewed at intervals after feeding. The males, always at strife, may be seen pursuing one another and exchanging blows with their bills while in the most curious attitudes, and with their long black crests elevated and expanded. They exhibit a great affection for the hen birds, which, never leaving the nest during the period of incubation, are protected and fed by them with all assiduity. Nearly all the males left their nests in the evening to pass the night at a distance of some kilometres from Villafranca on high trees in the environs of Castoza and S. Lucia dei Monti. So many were taken in the nets called "clausini" (which are used in different parts of Italy in a lucrative trade in birds) that the number of these males was reduced to the miserable limits that ultimately fell under the observation of everyone. Male and female in turn indefatigably provided for their young by bringing beakfuls, which consisted exclusively of locusts, and interesting indeed it was to see the quantity of Rose-coloured Starlings which with this object scoured the country to a greater or less distance, in flights of from ten to twenty, or even forty, returning in the same united fashion to their offspring.

In the roof of a certain house in Villafranca the Rose-coloured Starling remained even in company with the Common Starling. I had already observed that shortly after the arrival of *Pastor roseus* in that district, three or four of these birds strayed as far as Verona, and stopped there for some days in perfect harmony with the many Common Starlings which annually breed on the roof of a tall factory adjoining my house, and situated like it in the south towards the Adigetto and good-sized garden.

I have said that the departure of *Pastor roseus*, with its new and numerous progeny reared in Villafranca, took place on July 14th. I may add that on the morning of the 12th a general exit of the parents and young into the country had already been observed, whence but a few adults returned in the evening. It was also

observed that, in the afternoon of the 13th, Rose-coloured Starlings assembled in very great numbers on the fruit trees in the garden of the castle—a signal for a general departure the next day.

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A strong incentive to set at nought the law for the protection of these and other birds in the breeding season arose from the fact that the Rose-coloured Starlings were earnestly sought after from every quarter and paid for at the high price of from three to five *lire* a-piece. Ultimately twelve, fifteen and eighteen *lire* were asked for a pair—male and female. In this way some speculators made some hundreds of *lire* by a clandestine trade which it was impossible altogether to stop. Of the young Starlings a real traffic was made, many persons having procured a considerable number. On the arrival of nearly every train at the Villafranca Station children and men stood ready to offer the travellers little cages with one or two Starlings in them, now known under the name of the “*famosi Storlini di Villafranca*,” which the travellers thought themselves only too fortunate to secure.

Some persons thought fit to affirm that the capture of *Pastor roseus* was necessary for the protection of the fruit, which they said suffered much more injury from the birds than could be counter-balanced by the destruction of the locusts. But the truth of this assertion can be directly denied, as well from the declarations of the country people of Villafranca as from the result of my own observations. I can safely assert that if the Rose-coloured Starlings sometimes ate cherries, the loss of this produce was always in such inconsiderable proportions as to make the statement inconclusive. Greedy enough of fruit, on the other hand, did these poor birds prove when in captivity, and any one could see with what avidity they pounced upon the cherries, figs and pears that were given them, and particularly on mulberries. But one cannot be surprised at this, since they were in want of their chief natural food, locusts and other insects. It is certain that I have always seen them refuse fruit when it was possible to give them insects and chrysalids of silkworms in sufficient quantity.

Having mentioned the Rose-coloured Starlings which were kept prisoners, I may add that they are very easily domesticated, and may be said to have the same habits as the Common Starling, whose vivacity and activity they possess in nearly an equal degree, especially in seeking and contesting their food with their fellow-

prisoners. They bathe frequently, almost immoderately. They take nearly any sort of food; for instance, the flour of Indian corn mixed with grated cheese, paste, boiled rice, minced polenta, little bits of raw meat, and other things. In spite of their facility in adapting themselves to a state of captivity, it is not to be assumed that all Rose-coloured Starlings can support it without ill consequences or for long. Within two months a great mortality was noticed among them, amounting to about eighty per cent. The young were subject to a disease which swelled their toes, and that was almost always followed in a short time by death.

* * * * *

In conclusion, I may remark that the appearance of *Pastor roseus* in such thousands, and its nidification with us to such an extent, ought to be regarded as a real benefit to the country round Villafranca, where the locusts did so much damage, as well as a piece of good luck to the clever speculators; and lastly, in what concerns us most, it is a new and important fact in the history of Italian Birds.

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OCCASIONAL NOTES.

ORANGE VARIETY OF THE MOLE.—A pale orange variety of the common Mole was caught, a few weeks since, at Halton, near Tring, by Billington, the village mole-catcher and birdstuffer, and brought to me.—H. HARPUR CREWE (The Rectory, Drayton-Beauchamp, Tring).

[See page 225, where a somewhat similar variety of the Mole is recorded by Mr. Prior to have been obtained near Bedford.—ED.]

NOTE ON THE LONG-EARED BAT.—In the neighbourhood of Wilsden the Long-eared Bat, *Plecotus auritus*, was extremely abundant in 1876, and this was all the more noticeable from the fact of its comparative scarcity in previous years, its place hitherto having been occupied by the Common Pipistrelle.—E. P. P. BUTTERFIELD (Wilsden).

WADING BIRDS IN AUTUMN AT HOLY ISLAND.—On the 16th August I shot a Wood Sandpiper, a young bird of the year, which rose at a distance and settled again, and which I thought at first was a Green Sandpiper. It made a twittering noise, something resembling the note of the Common Sandpiper, and I shot it as it rose the second time from some longish grass and weeds. Green Sandpipers were not uncommon for a few

days. I saw two on the 13th August flying together, and apparently just arrived, as they came from the sea. On the 16th I saw another. On the 21st I got a young Ruff from a flock of five, and the same day several Green Sandpipers were seen at flooded pools amongst the sand-hills. They were very difficult to get near, as they always rise on seeing one approach, fly more unsteadily than a Snipe, and generally go straight into the air, seldom settling again within sight. On the 23rd I again saw several Green Sandpipers and wounded one, but did not get it. It settled on the open hill-side, as I expected dead, but rose quite wild again and flew to the beach,—the only occasion I ever saw one on the beach,—when it again rose suddenly and went away out of sight. On August 25th Green Sandpipers were still about. On the 28th, when looking for one, I saw a *Colias Edusa* butterfly, which I tried to catch, but failed to do so. No Green Sandpipers were seen after this. The first young Knots were killed on August 22nd, and a mature drake Pochard on the 30th. Mature Sanderlings appeared on the coast on the 16th August. I shot two (male and female) from different flocks, one of four, the other of nine birds. The old birds appear to pass on directly, for none are seen after the young arrive. Those obtained on their return from breeding are in a rather peculiar state, evidently changing from summer to winter plumage, but very little in the moult, the bare places on the breast being nearly obliterated, showing that some time has elapsed since they were sitting. These birds must have partially moulted on the back during the summer, the renewed feathers on the back having evidently come partially in summer plumage (that is faintly mottled), but as the feathers had grown they appear to have become grayer by degrees; and no doubt, from the broad edge of the new feathers and their indistinct markings, the remainder of the dark and cream-colour on each feather would wear out altogether as the season advanced and form part of the winter plumage of the bird. There is something curious in this species in this respect. I have met with old Sanderlings sometimes several weeks earlier. The first young bird of this species was obtained on August 18th. On the 14th September I got a Richardson's Arctic Gull whilst feeding on a dead herring on the shore. I did not before know they fed in this manner. The first young Bartailed Godwit was shot on the 19th September. Plenty were seen long before this, but in large flocks and wild. On August 16th I found red feathers of this bird cast where a flock had been preening themselves. An old male Bartailed Godwit, nearly in its plain gray winter plumage, but with numerous red feathers on its under parts and a few summer feathers remaining on its back, was killed on September 14th. It was moulting very regularly, the fifth primary from the end on each side being short, and the other four longest feathers were unchanged. This is the first bird I have seen killed here in a similar state of plumage, which is curious. The species lays four eggs, and therefore, if there were the

ordinary number of old and young, every third bird would be an old one, supposing all the young birds grew up; but how different is the case, not one in fifty being adult! It would be wrong to suppose that because young Wood Sandpipers, Green Sandpipers and Ruffs are met with so early in the season they have therefore been bred in this country. They are simply passing on their regular autumnal migration, just as the Common Sandpiper leaves us so soon as the young are able to fly well. A few hundred miles are nothing to these birds. The three species just named breed comparatively near us, whilst the Common Godwit, Knot and Sanderling, which I believe breed exclusively within the Arctic Circle arrive only a few days after them. It seems quite possible the three first-named species were attracted on their migration by the unusual quantity of fresh water on the grass-lands.—CHARLES MURRAY ADAMSON (North Lesmond, Newcastle-on-Tyne).

HOOPES NEAR SALISBURY.—I send the following account of the occurrence of six Hoopes which were seen in this neighbourhood during the month of June last, and which account I believe to be thoroughly trustworthy, having seen and questioned the eye-witness myself. A young man named William Holbeck, who knows well all the common birds of our district, was floating gently down the river in a boat, about two miles and a half from Salisbury, when he was attracted by the sight of some curious birds that he had never seen before. They were flitting about some osier-beds on some little islands in the middle of the stream. They consisted apparently of two old birds and four young ones, the younger birds having the appearance of having scarcely reached their full feathering, and being more distinctly marked than the old ones. He watched them closely for some ten minutes, during which time they took little or no notice of him, the two old birds flitting on in front and uttering a kind of chirping noise as they apparently hunted for insects and caterpillars on the willows, and the younger birds following them. He came home in a great state of excitement, and begged Mr. Norwood, the head man in his office, to come out at once with his gun and secure some of them, as they were birds he had never seen before, and which he felt sure must be rare ones. He described them as being about the same size as Thrushes and as being barred with black and white on the back and tail, the old birds having a splendid top-knot, which they every now and then extended “in this way”—*i. e.* holding up his hand and spreading out his fingers apart from each other as he said so. Mr. Norwood (who is himself an ardent ornithologist and birdstuffer, and from whom Holbeck had gathered a good deal of information about birds) brought out Morris’s book of birds, and showed him several of the plates before he turned to the Hoopoe, which bird he told me, from his clerk’s description, he at once conjectured they were; but directly he turned to the picture of the Hoopoe, Holbeck, with much emphasis, declared,

"That's the bird—that's the bird I saw! I am certain of it!" Mr. Norwood could not, however, possibly leave that evening, and on Sunday they were nowhere to be seen, and I much regret that I cannot glean any further information concerning them; but I have no doubt in my own mind—neither has Mr. Norwood—that they were Hoopoes, and apparently they must have been bred somewhere in the neighbourhood, possibly in some of the osier-stumps on these little islands, which lie very quiet and undisturbed at that spot. It was on Saturday, either the 9th or 16th of June, that Holbeck saw the birds; but I was not informed of it until last month, otherwise I might have been able to glean some further information concerning them. I may add that the Hoopoe is not altogether an uncommon bird in this district. I have the following notices of its occurrence in our more immediate neighbourhood:—One shot at West Knoyle by Thomas Grey in 1865; a male bird shot at Breamore in May, 1869; one shot on Mr. Crook's farm at Dean about 1871; one seen at West Knoyle by Mr. E. Baker in 1872; one shot at Upton Scudamore, and stuffed by King of Warminster, in 1873: one shot at Mere by Richard Brine on April 2nd, 1873; one picked up dead on Mr. Rawlence's farm at Wilton in 1874. This last bird being also one of a little party of these birds shot at on the race-course, just above his farm, some days previously.—ARTHUR P. MORRES (Britford Vicarage, Salisbury).

EGG OF THE PALLID SWIFT, *Cypselus pallidus* (Shelley).—I am not aware that the egg of this species has ever been described, and as I have an undoubted specimen—one of the pair taken by Favier in 1861 at Tangier—I venture to give some particulars as to its measurement, &c. Favier says, in his MS. notes (*vide* Irby's 'Ornithology of the Straits of Gibraltar'), "This Swift is found near Tangier on passage, crossing to Europe in April and May. Some remain to breed; but it is the least common of the species, being seen alone or in pairs in company with *C. apus*, which circumstance makes it difficult to distinguish them. I found a pair in July, 1861, nesting in company with some House Martins, *Chelidon urbica*; the nest was simply an old nest of that Martin, which the Swifts had appropriated, and contained two eggs of the usual *Cypselus* shape, their longitudinal circumference being 64—66 millimetres." I obtained my specimen from Olcese, Favier's successor, while I was quartered at Gibraltar in 1873. It has a label, in Favier's indifferent hand-writing, "*Cypselus murinus*," that being the name (applied by Brehm in 1855 to a bird *presumably* of this species) by which he knew the bird. It agrees exactly with his measurement, and measures $\cdot 92 \times \cdot 61$ inches, being, of course, pure white in colour and without any gloss. This is somewhat smaller than average eggs of *C. apus*, which measure $\cdot 94 \times \cdot 65$ inches; but the total length of *C. pallidus* is only 6 inches, while that of *C. apus* is

7½ inches. *C. pallidus* breeds at Gibraltar, where Colonel Irby observed it nesting in the "weep" holes of the masonry of a portion of the old sea-defences this last spring. Attempts were forthwith made by an energetic officer of the Rifle Brigade to get at the eggs; but these were unfortunately found to be at a great distance from the mouth of the holes, in some cases as much as 10 feet, and, though various contrivances were resorted to, all that could be reached were broken in the attempt.—SAVILE G. REID, R.E.

ANECDOTE OF A ROUGH-LEGGED BUZZARD.—The following circumstance has been communicated to me, as having recently occurred in this neighbourhood, and is, I think, worthy of record:—A Rough-legged Buzzard pounced on a good-sized rabbit, and, flying off with it in its talons, settled on the top of a pole where a pole-trap happened to be set for hawks. In this trap the Buzzard was caught by one leg. It did not, however, relinquish its prey, but breaking the fastening of the trap it flew to a distance of about fifty yards with the trap hanging to one foot and the rabbit grasped in the other. It then alighted, and when found was in the act of devouring the rabbit, notwithstanding its being itself held captive by one leg in the gripe of the pole-trap.—J. H. GURNEY (Northrepps, Norwich).

TERNS AND SKUAS IN THE ESTUARY OF THE MOY.—On the 11th May Common Terns appeared in the Estuary in their usual numbers, and by the 20th and 21st an unusually large flight arrived, comprising both the Common and Arctic species, but in what proportion the two arrived I could form no opinion, though I shot a few of both for comparison. They remained in the Bay and Estuary for about a week, and then disappeared, leaving only the usual stock of Common Terns that breed in the neighbourhood. This flight was accompanied by six Richardson's Skuas, three of which were in dark and three in light-coloured plumage. As they all had long tails, no doubt they were all old birds. I was very much interested in watching their habits, and perceived that, although they all consorted together when resting on the water or the sands, they generally kept in pairs, a light and a dark bird resting quite close together. Forgetting that Saxby, in his 'Birds of Shetland,' states that he has had birds of both sexes and all ages in both plumages as well as in an intermediate stage, and also that he has taken a light and a dark-coloured nestling from the same nest, I imagined that each couple might be male and female, the former being the light and the latter the dark-coloured bird, and in order to ascertain the fact I shot three of them. One of these had a pure white throat and breast, the white extending completely round the back of the neck, with a faint tint of straw-colour at the sides of it. The second had only the white breast, with a faint tinge of the straw-colour also on the sides of the neck; and the third was dark all over, having a few traces of a lighter brown colour on the breast and sides of the neck.

On skinning and dissecting them I found that my surmise as to sex was incorrect, for all three proved to be females, having eggs in the ovaries varying in size from No. 8 to B shot.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

THE ATTRACTIVE POWER OF LIGHT ON BIRDS.—I have a very curious instance to give you of the attractive power of bright lights on birds. On or about August 29th, 1876, the officers of one of Her Majesty's regiments were seated at mess at Dover, and, the night being warm, the windows were open, when, to their great astonishment, they saw numbers of small birds coming in, while they were sitting at dinner. The building in which they were stands high up on the Castle Cliff, and any migrants journeying over the sea or along the shore would readily be attracted by it, when brilliantly lighted up, as it was on this occasion. A regular hunt ensued, and about a hundred birds were presently caught. Whether that was all, or whether any got away, my informant did not know. A few which were brought to him to name were Common Redstarts and Garden Warblers, and from the description of the officers it appeared that some of the others were Wagtails. On the same night the Swifts were affected in the same way as the small birds which flew into the officers' mess-room. My father, who chanced to be passing through Dover, was sleeping at the Lord Warden Hotel, and in his sitting-room was a chandelier of gas, and three times Swifts, attracted by the glare of it, flew against the panes of glass. I have no doubt it was a dark night, but it was not observed to be unusually so, and no note was taken of the direction of the wind, or whether it was foggy or not.—J. H. GURNEY, JUN. (Northrepps, Norwich).

PIED FLYCATCHER AND BLACK REDSTART IN SOMERSET.—A Pied Flycatcher was killed near Williton in April, and brought to me for identification in September last. Perhaps I should have heard of it sooner had there not been some possible "qualms of conscience" about the Bird Act. This bird so seldom occurs in this part of the county—in fact, I think only one Somerset specimen has been noted in 'The Zoologist' since Mr. Haddon's was obtained near Taunton some time before 1871—that I am very sceptical as to the correctness of Mr. Crotch's note on its breeding in this county, in the 'Proceedings' of the Somersetshire Archæological and Natural History Society. The Black Redstart is by no means so uncommon, especially along the coast, where I think it may be considered a regular, though never a numerous, autumnal visitant. The bird in question, an adult female, was taken in the town of Taunton about the 14th November, and kept alive for a short time by its captor, but he does not appear to have known much about it, for he fed it on hemp-seed, and consequently starved it. It was eventually brought to me for identification minus the head, which had been eaten by the cat.—CECIL SMITH (Bishop's Lydeard, Taunton).

NOTE ON THE PIED WAGTAIL.—A friend, writing to me on the 5th December, mentioned a circumstance in the economy of our Water Wagtail which may interest your readers. “A pair of these Wagtails did a thing this summer which I should imagine to be unusual—they built in an old rick of faggots which had not been touched for two years, and reared a brood. Before the brood had left the nest the old birds took possession of an old nest near by in the same rick, laid their eggs, and reared a second brood, continuing to feed the first brood during the second operation of incubation. Before the second brood had flown off, the first had quitted the nest, and the old pair immediately returned to it, and, without deserting the second brood, proceeded to lay for a third time. There was every prospect of a third hatching, but the bird was disturbed,—one of the eggs broken in the nest,—which caused it to be forsaken. Is this an unusual thing? It seems to me a very curious instinct, very anti-Malthusian, and, in a bird with so few natural enemies, uncalled for, the determination to rear such a lot of progeny.”—E. H. RODD (Penzance).

SPOTTED REDSHANK IN THE COUNTY MAYO.—A Spotted Redshank visited us last autumn, and haunted the shores of the Moy Estuary for some weeks in October and November; but owing to the very stormy weather we had then I was unable to make any attempt to secure it. The first intimation I had of its presence in the locality was early in October, when on two occasions I heard a faint call like that of the Spotted Redshank, but too indistinct to be recognized with certainty. However, on the 3rd November, when returning from Bartragh in my punt, I again heard the same peculiar call, sufficiently near and distinct to be clearly recognized, and shortly afterwards I saw the bird flying very high in the direction of Bartragh. On the 10th I heard it frequently calling amongst the islands at Rozerk, and on the 17th I fell in with it on the Moyview shore, feeding with some Common Redshanks, and had such a good view of it through a glass that I was able to see most distinctly the dark line between the bill and eye, which would have enabled me to identify the species, even if I had not heard its call.—ROBERT WARREN (Moyview, Ballina).

SPARROWHAWKS FLOCKING.—One bright afternoon, about the 8th or 9th September, on the heaths bordering Hants and Dorset, my attention was attracted by a noise which resembled the “weet, weet, weet” of the Wryneck. On first hearing it I was at a loss to know from whence the sound proceeded; but I was not long in doubt, for on looking up I saw far above my head, in the clear bright sunshine, a number of birds playing with and chasing each other in rapid circular flights, very gracefully executed, uttering at the same time the cry above alluded to. The birds proved to be *nine* Sparrowhawks, two of which seemed considerably less in size than the others, but all possessed equal powers of wing. Upon enquiry

I learnt that a nest of Sparrowhawks had been reared in a fir wood near, and that the pair of old birds had been seen about the locality all the summer. Those I saw were undoubtedly the inhabitants of this nest; but the question arises, could they all have been of one family? and even provided two were the parents, is it not very unusual for this species to lay so many as seven eggs? or is it possible that the young of two nests were thus congregating? If so, it seemed to me that they were unnaturally social, for I had never before seen more than a pair of these birds together on the wing.—G. B. CORBIN (Ringwood, Hants).

WHITE-FRONTED GOOSE.—On the 20th October Mr. Collins Splatt, of Plymouth, presented me with a White-fronted Goose, *Anser albifrons*, which had been killed a few days before on a down near Colstock, and was said to have associated with some tame geese. It was, without exception, the finest in plumage I ever saw, the bands on the breast and belly being so broad and close together as to make the under parts appear almost wholly black. On examination I found the stomach full of the common Dutch clover, *Trifolium repens*, mixed apparently with a dark kind of gravel. Several geese of the same species were afterwards exposed for sale in our markets, all of which were said to have been killed in Cornwall.—JOHN GATCOMBE (Stonehouse, Plymouth).

ALBINO SPECIMENS OF THE COMMON SNIPE AND WRYNECK.—In the spring of the present year an albino specimen of the Common Snipe was killed at the Wilstone Reservoir, near Tring, by one of the keepers of Baron Lionel de Rothschild, and is now in his possession. A few days ago (October 23rd) a pure white Wryneck, a young bird of the year, was brought to me. It had been killed a few weeks previously in the grounds of Mr. R. S. Colet, of Wendover Hall. It is now in the collection of Sir John Harpur Crewe, of Calke Abbey, near Derby.—H. HARPUR CREWE (The Rectory, Drayton-Beauchamp).

PURPLE GALLINULE IN NORFOLK.—Another specimen of the green-backed species was shot in Norfolk on the 1st November, and there is no reason for thinking it had escaped from captivity. I had a letter on the 5th of that month from the owner, in which he said that it was shot at Stalham, which is only a few miles from Hickling, where the last recorded specimen was obtained. It is in just the same plumage as the other, I hear, and a male bird.—J. H. GURNEY, JUN. (Northrepps, Norwich).

MERLINS NESTING IN A TREE.—At a recent meeting of the Natural History Society of Glasgow, Mr. James Lumsden exhibited a pair of Merlins, *Falco aesalon* (male and female), which had been shot from the nest in a tree on the banks of Loch Lomond, in July last. Mr. Lumsden stated that he exhibited these birds in order that the somewhat unusual

position of the nest might be recorded. The Merlin, in this country, is usually found nesting on the ground or in rocks, and what renders the present case of greater interest is the fact that the ground all round the tree was just of such a character as is usually chosen by the Merlin for nesting, showing that the tree could not have been fixed on for want of another suitable place. The nest occupied appeared to be a deserted one of *Corvus corone* or *C. cornix*. Nests of Merlins in trees are not uncommon in Lapland.

SPRING MIGRATION OF BIRDS.—In 'The Zoologist' for December last (p. 513), Mr. Cordeaux, writing on the "Spring Migration of Birds on the East Coast," says, "My impression is that the males of this species (Tree Pipit), also the male Willow Wrens, precede the females by some days; we do not hear their notes, however, before their mates arrive." From my inability to discriminate the males from the females of the above species, except by their song, I am unable to say whether the males do arrive before the females. It is, however, certain that the Willow Wrens did not give any indication of their presence by their song until the 19th April, although the female birds must have arrived a few days earlier, as we received no increase of numbers after the 16th. I first heard the Tree Pipit on the 22nd April, but did not hear it again for at least a week, though the pair were to be seen frequently in the locality, the weather being still excessively cold. What particularly struck me, as bearing on the point at issue, was the absence of the song of the Yellow Wood Wren in all the more open and hilly woods during the whole of May, whilst they were in full song in the sheltered and low-lying districts on the 20th. This was noticeable both in Airedale and Wharfedale. The unusually cold spring of 1877 might, to some extent, if not mainly, account for the reticence of our summer migrants after their arrival.—E. P. P. BUTTERFIELD (Wilsden).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 15, 1877.—DR. GWYN JEFFREYS, F.R.S., Vice-President, in the chair.

Messrs. W. Joshua (of Cirencester), W. S. Lawson, B.A. (of St. Peter's College, Cambridge), and the Rev. M. A. Mathew (Vicar of Bishop's Lydeard, Somerset), were ballotted for and elected Fellows of the Society.

Mr. J. Jenner Weir exhibited a case of butterflies captured on the Alps, at a height of between 8000 and 9000 feet. These were interesting from the fact that they presented considerable similarity to, without being

specifically identical with, those obtained by the naturalists of the late North Polar Expedition.

The papers read at this meeting all related to the Arctic Fauna. The first was a "Report on the Insecta (including *Arachnida*) collected by Captain Feilden and Mr. Hart during the recent Arctic Expedition," by Mr. R. M'Lachlan. This specially deals with materials obtained from the parallel stretching from 78° N.; in other words, shows the results of an examination of the Insect fauna of Grinnell Land—that of West Greenland, as far as Disco Island, having already received considerable attention from O. Fabricius, Schiödte, and others; while that of East Greenland has been treated of in the "Report of the Second German North Polar Voyage," The collection made by the 'Polaris' Expedition has not appeared in a connected form. Mr. M'Lachlan's analysis of Capt. Feilden and Mr. Hart's collection runs thus:—*Hymenoptera*, 5; *Coleoptera*, 1; *Lepidoptera*, 13; *Diptera*, 15; *Hemiptera*, 1; *Mallophaga*, 7; *Collembola*, 3; *Araneida*, 6; and of *Acarida*, 6 species; giving a total of 57 species. Bearing in mind these were collected in localities between 78° and 83° N. lat., and that among them are thirty-five specimens of gaily-coloured butterflies and two species of humble bees, it is evident that the insect fauna of this so-called northern "land of Desolation" is after all not so meagre as might have been anticipated. The paucity of the *Coleoptera* is not a little remarkable, the comparative abundance of the *Lepidoptera* as striking a feature. In this collection there are no very important novelties, but the marked varieties of certain already known species warrant the suspicion that they represent a local insect fauna. It is stated that many lepidopterous larvæ were found in the stomachs of Gulls and Terns shot by members of the Expedition, so that only a small portion can be left to be transformed into the perfect state. Judging from the material which passed through his hands, Mr. M'Lachlan regards it as having an evident affinity with the fauna of Lapland, and he inclines to the belief in a former extensive circumpolar fauna, of which the present is but a lingering remnant.

The second paper read was a "Preliminary Notice on the Surface Fauna of the Arctic Seas, as observed in the recent Arctic Expedition," by Dr. Edward L. Moss, late Surgeon H.M.S. 'Alert.' The author observed that the seas north of the Greenland settlements are subject to such varying conditions at different seasons of the year that their surface fauna cannot be supposed to be very constant. According, however, to what was met with in this voyage, he divides the watery area into three zoological regions:—(a) A district in the latitude of Melville Bay temporarily monopolized by Infusorian *Peridinea*; (b) a north water region inhabited by Pteropods, certain aberrant Tunicates, *Sagitta*, and free *Hydrozoa*; (c) a subglacial region, comparatively azoic, so far as surface life is concerned. Remarks on species captured and other matters altogether form an interesting

account of "deck-work," so to say, on board the 'Alert' by the above-mentioned naturalist, who in previous contributions on southern surface fauna has shown much activity and capacity in this field of observation.

The third paper was "On the Annelids of the British North Polar Expedition (1875-6)," by Dr. W. C. McIntosh. In this collection, dredged between 79° and 82° N., there were some eight species not found among the Annelids procured by H.M.S. 'Valorous' in Davis Straits. All, however, have already been entered in the catalogue of the Arctic Fauna as obtained elsewhere, the majority of the species having a wide range in northern waters. Some even are common to the British Seas, the North Atlantic generally, and the Gulf of St. Lawrence. The value of the present collection must therefore depend on its being taken along with series from other localities. A critical comparison with American forms is desirable before clear views can be arrived at respecting the geographical distribution of the northern Annelids.

A lively and interesting discussion followed the reading of these papers. Among the speakers were Capt. Sir George Nares, Dr. Rae, Capt. Feilden (who humorously related incidents of insect capture—no easy matter in these inhospitable regions), and the Vice-President, Dr. Gwyn Jeffreys, whose valuable physical researches and dredging experiences while in the 'Valorous,' as tender to the Arctic ships, have already appeared in the Royal Society's publications. A volume of Dr. Moss's sketches of marine creatures, with maps and diagrams, illustrated the regions in question and the several subjects brought forward.

December 6, 1877.—Prof. ALLMAN, F.R.S., President, in the chair.

The following gentlemen were elected Fellows of the Society:—Messrs. J. Nugent Fitch (Newman Street, W.), J. S. Gamble (Assist. Conserv. Forests, Simla), F. S. Piggott (Essex Court, Temple), A. B. Stewart (Rowcliffe Lodge, Langside, Glasgow), and Prof. John Macoun (Belleville, Canada).

Mr. Charles Stewart gave the gist of a paper "On certain Organs of the *Cidaridæ*," illustrated by some beautiful pencil drawings from nature. The main points of this communication may thus be summarized:—Among the Sea Urchins, or *Echinoidea*, the families *Diadematidæ*, *Echinometridæ*, and *Echinidæ* have long been known to possess external branchiæ in the form of five pairs of hollow conical processes, with secondary diverticula therefrom, the same being strengthened by calcareous plates or spicules. The existence of such branchiæ in the *Cidaridæ* was denied by Müller, but insisted on by Alex. Agassiz, in his 'Revision of the *Echini*.' Mr. Stewart, in his examinations of a spirit specimen of *Dorocidaris papillata*, around the buccal membrane, failed to perceive them; but on removing the dorsal half of the corona, discovered five organs within, which functionally take the

place of the absent external branchiæ. He states that the size of the jaw-chamber is increased by the raising of the "compasses" when the transverse muscles contract, especially if the jaws be protruded. Under such conditions water finds ingress by a crevice produced, and the interiorly-placed gills thus bathed. The peculiar mechanism of the teeth and jaws was here explained, and the function of the so-called "compasses" noted. As regards the "pedicellariæ" of the *Cidaridæ*, Mr. Stewart observed that when the jaw ends in a terminal fang the chamber has a second opening in addition to the large triangular tooth-armed orifice near the tip, the fang itself being hollow and perforated external to and in front of the tip. He suggests that this probably serves as a channel for the injection of a poison, secreted by two glands placed in the vicinity of the pedicellarian head. He compares this to the falces of the spider or to the poison-fangs of venomous serpents. Another point to which he called attention was that in *Cidaris tribuloides* and *Phyllacanthus bucculora*, in addition to the calcareous arches bridging over the ambulacral pores (J. Müller's vertebral processes) there are delicate solid spines between each pair of pores, which project downward and tend to arch over the ambulacral vessel. These spines recal the similar processes scattered over the inner surface of the corona of the *Clypeastridæ*. He further showed the genital gland of *Dorocidaris papillata* as possessing a calcareous spicular framework, and that the abundance or paucity of these vary considerably according to circumstances. In Sir Wyville Thomson's lately-described new species of *Cidaris* (*C. nutrix*), the latter condition is dwelt on as distinguishing it from *D. papillata*—a consideration which may hereafter require to be modified.

A short note "On the Migration of Wild Geese," by Dr. R. C. A. Prior, was read, in his absence, by the Secretary, and was to the effect that an immense flock of Wild Geese had lately passed over the Azores, and these were supposed to have come from Newfoundland and to be on their way towards Morocco. He considered that a wide dispersion of the seeds of water-plants would be likely to result from such a migration.

Mr. Charles O. Waterhouse communicated a "Report on a small Collection of Insects obtained by Dr. J. C. Ploëm in Java, with a Description of a new Species of *Hoplia*." These insects had been collected in the vicinity of Sindang-læja, and transmitted safely to England by post in the hollow of a piece of bamboo. Besides a number of specimens of the new species (*Hoplia aurantiaca*) there were examples of *Popilia biguttata*, Wied., *Chalcosoma atlas*, Linn., *Dascyllus fulvulus*, Wied., a variety, *Rhyparida*? sp., and some undetermined species of *Gryllus* and *Forficula*.

Several botanical papers were then read, and some exhibitions followed.—
J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

November 20, 1877.—Professor FLOWER, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of October, 1877, and called special attention to a Layard's Flying Squirrel, *Sciuropterus Layardi*, presented by Sir Charles Peter Layard, October 8th, and to a pair of East African Buffaloes (*Bubalus æquinoctialis*), purchased 27th October.

Mr. Howard Saunders exhibited a specimen of the rare Aleutian Tern, *Sterna aleutica*, from Alaska, and made remarks upon its intermediate position between typical *Sterna* and the group of Sooty Terns (*Onychoprion*).

A communication was read from the Marquis of Tweeddale, containing an account of a collection of birds made by Mr. A. H. Everett in the Island of Zebu, Philippines. Six new species were found in this collection, and were named *Oriolus assimilis*, *Phyllornis flavipennis*, *Zosterops Everetti*, *Prionochilus quadricolor*, *Turnix nigrescens* and *Megapodius pusillus*.

Three communications were read from Dr. O. Finsch. The first contained a report on a collection of birds made at Eua, Friendly Islands, by Mr. F. Hübner, which had increased our knowledge of the avifauna of Eua, from four to twenty-four species. The second contained a description of a collection of birds made on the Island of Ponapé, Eastern Carolinas, by Mr. J. Kubary. The total number of species known at present from Ponapé was stated to be twenty-nine, of which seven were peculiar to the Island. The third contained a list of the birds obtained at Ninafou Island in the Pacific, by Mr. F. Hübner. This collection raised the number of the known birds of this island from one to twenty.

Prof. Garrod read notes on the *Tania* of the Rhinoceros of the Sunderbunds, *Plagiotania gigantea*; on the anatomy of the Chinese Water Deer, *Hydropates inermis*; on the possible cause of the death of a young Seal; and on the occurrence of a gall-bladder in certain species of Parrots.

Mr. Howard Saunders read a paper on the *Laridæ*, collected during the voyage of H.M.S. 'Challenger,' which comprised nine species of *Sternæ*, five of *Laridæ*, and three of *Stercorarinæ*, altogether seventeen species, represented by forty-seven specimens; several of these were very rare in Museums, although none of them were absolutely new to science.

A communication was read from Dr. A. B. Meyer, containing some additional proofs of the fact that the Red *Eclecti* are the females of the Green species of that genus.

A paper was read by Mr. G. French Angus, containing "Notes on *Helix sepulchralis* of Ferrusac and its allies, with Descriptions of two new Species."

December 4, 1877.—Professor NEWTON, M.A., F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of November, 1877, and called special attention to a young example of the Brown Pelican, *Pelecanus fuscus*, from the West Indies, purchased November 6th, and to an example of the Red or Brazilian Wolf, *Canis jubatus*, purchased November 30th. Of this last-named remarkable carnivore no specimen had been previously brought alive to Europe.

Mr. Henry Seebohm exhibited and made remarks upon some of the rarer eggs and birds which he had obtained during his recent visit to the Arctic Regions of the Yen-e-sey, in Eastern Siberia, and gave a rapid sketch of his journey. Some of the skins were interesting from the fact that they extended our knowledge of geographical distribution, such as *Phylloscopus trochilus* and *Acrocephalus schœnobæus*, from long. 88° E., *Anthus Gustavi* of Swinhoe (*A. Seebohmi* of Dresser and *A. batchianensis* of Gray) from the same longitude, and young in first plumage of this species.

Mr. Saville-Kent exhibited the plans of a Zoological Station and Museum and Institute of Pisciculture to be established at St. Heliers, Jersey. The object sought in the establishment of this Institution was the provision within British waters of facilities for pursuing marine biological investigations similar to those which exist at the Zoological Station of Naples and at the Anderson School of Natural History at Penikese Island, Buzzards Bay, U.S.A.

The Secretary exhibited, on the part of Mr. Andrew Anderson, some specimens of Natural History collected in India, amongst which were chicks of *Rhynchops* and specimens of *Podiceps cristatus* obtained breeding in North-Western India.

A communication was read from Mr. Henry Lee, containing an account of the capture of a Risso's Grampus at Sidlesham, near Chichester.

Mr. A. G. Butler read a paper in which he gave an account of a collection of Lepidoptera, made in Northern Formosa by Mr. H. E. Hobson.

A communication was read from the Marquis of Tweeddale, containing an account of a collection of birds made by Mr. A. H. Everett in the Island of Mindanao, Philippines. Eight new species were found in this collection, and were named *Tanygnathus Everetti*, *Mulleripicus fuliginosus*, *Penelopides affinis*, *Criniger Everetti*, *Orthotomus nigriceps*, *Æthopyga bella*, *Anthothreptus griseigularis*, and *Ptilopus incognitus*.—P. L. SCLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

Nov. 7, 1877.—Prof. WESTWOOD, M.A., F.L.S., President, in the chair.

Donations to the Library were announced, and thanks voted to the donors.

Mr. M'Lachlan exhibited ten of the thirteen species of Lepidoptera collected by Captain Feilden and Mr. Hart in Grinnell Land, between the parallels of 78° and 83° N. lat., during the recent Arctic Expedition. They consisted of *Colias Hecla*, Lef., var.; *Argynnis polaris*, Bdv.; *A. Chariclea*, Schnd., many vars.; *Chrysophanus phleas*, Linn., var.; *Lycæna Aquilo*, Bdv.; *Dasychira Grænländica*, Wocke; *Mamestra*? n. sp.; *Plusia parilis*, Hübn.; *Psycophora Sabini*, Curt.; and *Scoparia*, n. sp. He entered into some details respecting the insects generally of this high northern region and their habits, in anticipation of his extended Report to be read at the next meeting of the Linnean Society.

The Rev. A. E. Eaton remarked, with regard to Arctic insects, that he was disposed to consider that their transformations may sometimes be protracted through two or more summers. He adduced some apparently analogous phases in respect of plant life in Spitzbergen, where he had noticed, in June, plants seemingly upon the point of flowering, which had evidently remained in that state under the snow since the previous autumn. He said that in the islands referred to insects are not altogether indifferent to the approach of midnight, although the diurnal variation of light does not, in July, equal in intensity the difference between rural sunshine in this country and the light which passes for daylight in London when the sky is slightly overcast. He mentioned, in conclusion, that no *Bombus* has been hitherto found in Spitzbergen, and that *Pedicularis hirsuta* appeared to be unvisited by insects in that archipelago.

In reply to a question from the President as to the habits of the Arctic *Culex*, the Rev. A. E. Eaton remarked that when in Spitzbergen he had suffered much from the attacks of this insect, which had the habits of a true mosquito.

Mr. Meldola exhibited a five-winged specimen of *Gonepteryx rhamni*, caught near Brandon, Norfolk, in August, 1873, by Mr. John Woodgate. He also exhibited a gynandromorphic specimen of *Pieris brassicae*, taken near Thame, Oxfordshire, by Mr. J. B. Watson, in August, 1877. In this last specimen the right fore and hind wings were female and the left male; the right antenna was also longer than the left.

Mr. H. Goss exhibited an hermaphrodite specimen of *Gonepteryx rhamni*, caught in Abbot's Wood, Sussex. He stated that he believed the specimen to be what Oechsenheimer called a "perfect hermaphrodite," the whole of the *right* side, both in characters and organs, being female, and the whole of the *left* side male. Mr. Goss remarked that from the recorded instances of hermaphroditism among the Lepidoptera it appeared that it was more

common for the *left* side to belong to the female sex, and that in fourteen out of twenty-three instances of perfect hermaphrodites cited by Burmeister this was stated to be the case, and only in nine instances out of the twenty-three did the female characters and organs appear on the right side.

Mr. J. W. Douglas exhibited the following insects:—

1. An example of *Polyphylla Fullo*, Linn., which flew on to a steam vessel at Antwerp in August, and was thus brought to London.

2. A specimen of *Tettigometra impressopunctata*, Duf. (a rare species, and the only representative of the genus in Britain), which was taken casually, on October 1st, at Sanderstead Downs, this being the fourth recorded locality in this country.

3. An example of *Typhlocyba debilis*, Doug., taken at the same time and place as the last-mentioned; also *T. tenerrima*, H.-Schf., its nearest ally, to show the difference of the species.

Mr. W. C. Boyd exhibited a larva of *Pieris rapæ*, which had been attacked by *Microgaster*. (See Proc. Ent. Soc., July 5th, 1875, and December 6th, 1876.)

Prof. Westwood read notes on new exotic lamellicorn Coleoptera, and exhibited specimens of *Calomelopus Nyassæ* and *Amblyodus Nicaragua*, also drawings of these beetles and of *Valgus furcifer*, Sumatra; *Nicagus obscurus*, North America; *Cyclidius velutinus*; *Cremastocheilus crassipes*, California; and *Pantodinus Klugii*, Guatemala.

Prof. Westwood, *à propos* of Mr. Wood-Mason's discovery of stridulating apparatus in scorpions, announced to the Society at the September meeting, called the attention of the Society to a letter in 'Nature' (Nov. 1st, 1877, p. 11), from Mr. J. Saville Kent, on a sound-producing crustacean.

Mr. Wood-Mason remarked that structures in Crustacea, some of which certainly, and all of which probably, are for the production of sounds, were first brought to notice by Hoffmann,—in V. der Decken's 'Reisen in Ost-Africa (Crustaceen)'—but had been independently observed by himself in a number of species during his dredging excursion to the Andaman Islands in 1872. They were paired organs, as in Scorpions, the Mygale, and the Phasma to be brought to notice that night—that is to say, organs working perfectly independently of each other were on each side of the body.

Mr. Wood-Mason then announced the discovery of stridulating organs in *Phasmidæ*, in a species of *Pterinoxylus*, and in illustration of his remarks exhibited an impression of Westwood's plate of Serville's species, *P. difformipes*. Here, as in Crustacea and some other Arthropods, an apparatus working perfectly independently of its fellow was developed on each side of the body. The rough prominent basal portion of the costal nervure of the wings formed the rasp, in connection with which was developed a large oval "speculum," "talc-like spot," or "mirror." The rasps were scraped by the sharp and hard front edges of the tegmina, the dome-like form of which

seemed admirably adapted and probably did, to some extent, serve to increase the sound by resonance. In Serville's species, according to Westwood's figure, the stridulating apparatus appeared to be more highly developed, the "mirror" being more distinct and the tegminal cavities much more spacious. The males of the *Pterinoxyli* were unknown.

Professor Westwood mentioned the formation of a "Chanel Islands' Museum and Institute of Pisciculture Society" in Jersey.

The President also brought under the notice of the Society a recently-published paper by Dr. Anderson (Proc. As. Soc. Beng., Aug. 1877), containing an account of *Gongylus gongylodes*, Linn., a remarkable Indian *Mantis*, the pupa of which is stated to resemble a flower, both in colour, marking, form, and attitude, this resemblance being, it is suggested, for the purpose of attracting insects on which the pupal *Mantis* feeds.

Mr. Wood-Mason stated that the remarkable form and coloration of *Gongylus gongylodes*, and of other species of *Mantidæ*, had been known to him for years, but had remained an inexplicable puzzle till December, 1875, when his valued and talented correspondent, Mr. S. E. Peal, of Assam, informed him that he had just captured "a little rose-pink *Mantis* that simulates a blossom beautifully;" and six months later a second "beautifully white (wax-white) and larger than the previous pink one." On examination these specimens proved to be larvæ of *Hymenopus bicornis* of Serville, an insect of great rarity, and only up to that time recorded from Java. The species had the thighs of the four posterior legs expanded into broad pear-shaped plates; so that when seated on a twig with thorax and abdomen raised at right angles to one another, with the fore-legs drawn out of sight under the thorax, and with the four expanded thighs of the rest of the legs spread out two on each side, the "feet" of all these legs being brought to one spot, in form as well as in colour it must present a most perfect and deceptive resemblance to a flower. Here form conspired with colour in a most inimitable manner to produce the deception. The principal reason why this observation of Mr. Peal's was not published long ago was that there was no evidence that insects were attracted to the coloured Mantises as insects to flowers, for if this were not so the resemblance was meaningless; but the evidence required having been published by Mr. Wallace in the September number of 'Macmillan's Magazine,' he had come prepared to make known Mr. Peal's and his own observations, little expecting that reference would be made to the same subject from the chair. According to Mr. Wallace, a small *Mantis* which exactly resembled a pink *Orchis*-flower was shown to Sir Charles Dilke in Java. This species was not only said to attract insects, but even the kind of insects (butterflies) which it allures and devours was mentioned.

Sir Sidney Saunders then read some remarks on the specific identity of a spider (*Atypus*) taken at Hampstead.

Mr. C. O. Waterhouse read a paper containing "Descriptions of new Species of the Coleopterous Genus *Callirhipis* (*Rhipidoceridæ*) in the British Museum," and exhibited specimens of *C. longicornis*, male, Waterh. (Andaman Islands), and *C. dissimilis*, male and female, Waterh. (Borneo).

The Rev. H. S. Gorham communicated the continuation of his "Descriptions of New Species of *Cleridæ*, with Notes on the Genera and corrections of Synonymy."

Mr. A. G. Butler communicated a paper containing "Descriptions of a New Genus and two New Species of *Sphingidæ*, with general Remarks on the Family."

Mr. J. S. Baly communicated "Descriptions of New Genera and of uncharacterized Species of *Halticinae*."

December 5, 1877.—J. W. DUNNING, M.A., F.L.S., Vice-President, in the chair.

Donations to the Library were announced, and thanks voted to the donors.

Mr. W. L. Distant exhibited two rare species of Hemiptera-Heteroptera from the West Coast of Africa, viz. *Tetroxia Beauvoisii*, Fairmaire, and *Oncocephalus subspinosus*, A. & S.

Mr. F. Smith exhibited a fine series of both sexes of *Macropis labiata*, captured by Mr. J. B. Bridgman, of Norwich, at Brundall, near that city. A British specimen of the male had for many years been unique in the collection of the British Museum; at length a second male was taken in the New Forest by the late Mr. J. Walton, and twenty years subsequently Mr. S. Stevens took a third at Weybridge. During the past season Mr. Bridgman took both sexes in some numbers.

Mr. Smith also exhibited a specimen of *Rophites quinquespinosus*, captured at Guestling, near Hastings, by the Rev. E. H. Bloomfield during the past season. This capture added a genus and species to the British Hymenopterous fauna, and was the most important addition that had been made for many years.

Mr. Meldola exhibited three photographic enlargements of micro-photographs by Mr. Edward Viles, of Pendryl Hall, Wolverhampton. These photographs, two of which were of parts of insects,—viz. the mouth organs of a bee and the proboscis of a fly,—had been exhibited at the recent Exhibition of the Photographic Society of London, and had obtained one of the Society's medals. The original negatives, taken by means of the object-glass of a microscope fitted into the camera in place of the ordinary lens, were 3 inches square, while the finished enlargements were 30 × 24 inches, being thus enlarged 10 diameters.

Mr. Meldola next exhibited an acoustical experiment illustrating the effects of resonance in increasing the volume of sound emitted by

a vibrating bell. This illustration gave experimental demonstration of the action of the stridulating apparatus of the *Pterinoxylus* mentioned at the last meeting by Mr. Wood-Mason.

A discussion followed, in which Messrs. Wood-Mason, M'Lachlan and F. Smith took part.

Mr. J. W. Dunning called the attention of the Society to a paper recently published in the 'Proceedings' of the Cambridge Philosophical Society (vol. iii., part ii., Feb. 12th, 1877), "On a striking instance of Mimicry, with some Notes on the Phenomenon of Protective Resemblance," by Mr. Neville Goodman, M.A. The insect mimicked is the well-known hornet, *Vespa orientalis*, which is found commonly round the shores of the Mediterranean, and extends through Upper Egypt, Syria and Arabia, into Hindostan. The imitator is a species of *Laphria*, the resemblance consisting in similarity of colour, size, shape, attitude when at rest, and mode of flight. The author points out that the word "mimicry" is best applied to cases of resemblance of one living being to another, and suggests that the term "protective resemblance" should be confined to cases of assimilation to stones, sticks, bark, lichens, dead leaves, &c.* The author also refers to the fact that the phenomenon of resemblance (both mimetic and protective) is one of degree, and insists that this fact is entirely in favour of the view of the production of such resemblances through the agency of the "survival of the fittest," but is quite inexplicable on the teleological view of the origin of species.

The Secretary directed attention to a letter in 'Nature' (Nov. 15th, 1877, p. 45), detailing some experiments made upon *Abraxas grossulariata*, which tended to show that the insect was sensitive to certain sounds, and remarked that these facts appeared to lend experimental support to the existence of an organ of hearing in Lepidoptera, as recently described by Mr. A. H. Swinton (Ent. Mo. Mag., Nov. 1877).

Mr. F. Smith read a paper containing "Descriptions of new Species of Hymenopterous Insects of New Zealand, collected by Prof. Hutton at Otago." The author exhibited a collection of the insects in illustration of the paper, in which seventeen new species are described.

Mr. A. G. Butler read a paper "On the Lepidoptera of the Amazons collected by Dr. James W. H. Trail during the years 1873 to 1875."

Dr. Sharp communicated "Descriptions of eight new Species and a new Genus of *Cossonides* from New Zealand," and "Descriptions of some new Species and a new Genus of Rhynchophorous Coleoptera from the Hawaiian Islands."—R. MELDOLA, *Hon. Sec.*

* I have previously insisted on this distinction (Proc. Zool. Soc., Feb. 4, 1873).—R. M.

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[No. 14.]

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY HENRY STEVENSON, F.L.S.

IF the first half of the past year showed, so far as this county is concerned, a dearth of ornithological occurrences, the last six months have afforded but little more of special interest, and I have delayed my notes in consequence.

JUNE, 1877.

Golden Oriole.—I am informed on, I believe, reliable authority, that early in the spring a pair of these birds were seen on the Caistor Road, near Yarmouth, flying in and out of a plantation by the wayside, one bird striking the observer as particularly brilliant in colour as they flitted on in front of his vehicle, thus affording him a good opportunity of determining a species so attractive in plumage as not easily to be mistaken.

Norfolk Plover.—I am glad to report, with regard to this interesting species, that protection in the breeding season is effecting the desired object, and considerable numbers are again to be met with in their chief haunts in this county. A pair have also been known to rear their young this summer in a very favourable locality some twelve miles from Norwich, where they had not been known to breed for many years.

Great Gray Shrike.—From Mr. Anthony Hamond, of Westacre, I learn that two pairs of these birds were seen at Massingham, in West Norfolk, during the summer, but he is not aware that they attempted to nest there.

Strange Nesting-place of the Brambling.—The Brambling has never nested in my aviary till this year, although pairing has taken place and housekeeping preparations been shown by the desultory carrying about of building materials. This year, however, one hen Brambling was more demonstrative than usual in this way, and, to my great surprise, selected a site for her nest at the foot of, and not in, a small fir tree placed on one of the borders of the aviary. After the manner of a Sky Lark she formed a hollow in the dusty soil, and then carefully lined it with hair, moss and wool, after which she laid one egg and sat on it for a day or two, when it disappeared, destroyed probably by mice, or other birds, as my Sky Larks' eggs almost invariably are, in a similar position; and from that time she deserted her nest, which was soon pulled to pieces. It is the more strange that this strictly arboreal species should have selected such a spot for her nest, as a Linnet was sitting on eggs in the fir bush above her head, and a hen Chaffinch was doing her best at the same time to prompt her deficient instincts by building in a bush just opposite.

AUGUST.

Short-eared Owl.—A bird of this species was shown me by a Norwich birdstuffer, which had been brought to him, in the flesh, as early as the 3rd of August, and was said to have been shot just outside the city.

Wild-fowl breeding in Norfolk.—The early "close time" has told well for various kinds of fowl in Norfolk this summer, and that not only in the strictly preserved localities, but in places where, hitherto, they have been much harassed. A considerable number of Garganey were reared about Surlingham, and in the same locality on the 16th August I saw a "coil" of at least twenty common Teal making for the Broad at sunset. A pair of Shovellers also nested there this year, which they have not done for some years. In West Norfolk Mr. Hamond tells me that some Wigeon remained all the summer on the lake at Narford, and the Gadwall bred freely in that locality. Two broods of young Sheldrakes made their appearance on the estuary of the Lynn river, some of which were captured and turned off on a pond in that neighbourhood. These were, of course, old enough to take care of themselves; but I have recently heard, through a gentleman well acquainted with these birds in a wild state, as a few pairs still breed annually on his

sand-hills in the neighbourhood of Lynn, that although, when eggs are taken and hatched out under tame ducks or hens, the young are easily reared, if young wild Sheldrakes are captured and placed under the charge of the foster-parents, with nestlings of their own kind and age, they are never brought up to maturity; refusing the food supplied when once they have known their own mothers and their habits and diet.

Hooded Crow in Summer.—Amongst the species one would least care to acclimatise, from its egg-stealing proclivities, the “hoody” ranks supreme, yet we seem to have yearly more and more evidence of its inclination to do so. On August 6th a very accurate observer, at Northrepps, saw a Hooded Crow drive from her nest a Wood Pigeon, which made considerable resistance, and then devour the eggs. A young Hooded Crow, recorded by Mr. J. H. Gurney, Jun., in ‘The Zoologist’ for 1877 (p. 445), as shot by himself at Northrepps on August 20th, having been previously seen on the 18th, had no doubt been reared in the neighbourhood, as undoubtedly were the young brood seen at Sherringham, an adjoining parish, in August, 1867, as recorded by myself in ‘The Zoologist’ (2nd ser. p. 1012), on the authority of Mr. H. M. Upcher.

Pigmy Curlew.—A pair of these birds, in nearly full summer plumage, were killed at Blakeney in the first week of August.

Montagu's Harrier.—On the 15th a male of this species, in change from brown to grey plumage, was killed in this county and sent to London to be preserved, as recorded in ‘The Field’ of August 25th.

SEPTEMBER.

Manx Shearwater.—On the 15th a bird of this species was sent up to Norwich to be stuffed, but I could not learn in what part of the county it had been killed.

Snow Bunting.—I saw a single bird this autumn which had been shot here so early as September 19th, still showing many traces of its summer plumage.

Late appearance of the Cuckoo.—Mr. H. M. Upcher has recorded in ‘The Field’ of October 13th the fact of a Cuckoo having been shot at Sherringham on the 28th September. The age of the specimen is not given, but it was most probably a late bird of the year.

Autumnal Migration of Waders.—I am told that about the 18th

of this month, when, after a long prevalence of wind from the S. and S.W. it shifted suddenly to N.E. and N.W., the "muds" of Breydon were frequented for a few days with an unusual number of grallatorial migrants of various kinds; and of birds then procured may be mentioned two Spotted Redshanks and several Pigmy Curlews. A Spoonbill is said to have been seen at the same time.

Richardson's Skua.—An immature specimen was shot at Blakeney about the 18th.

OCTOBER.

Hoopoe.—I referred in this journal in 1875 to the singular fact that this species, which of late years has been a rare visitant to Norfolk, makes its appearance now in autumn rather than in spring, at which season, some ten or fifteen years ago, it was much more commonly seen. Mr. T. E. Gunn, bird-preserved, records, in a local publication, a specimen as shot at Filby, near Yarmouth, this month.

Blue-throated Warbler.—Though not actually procured in Norfolk, having been taken on the Lowestoft Denes, the example of this warbler recorded by Mr. G. P. Moore, in 'The Zoologist' (1877, p. 449), as entangled in some nets in July last, is most interesting to local ornithologists, as it belongs to the Scandinavian form of this species, as did also one taken under similar circumstances, and near the same spot, at Lowestoft, in May, 1856; another found dead on Yarmouth beach in September, 1841; and a third, recorded in 'The Zoologist' for 1867 (p. 1014), by Mr. J. R. Griffith, of Oxford, as identified by himself as it alighted, on the 1st September of that year, upon the rigging of the S.S. 'North Star,' when off the Norfolk coast; the vessel being bound at the time from Christiania to London.

Spotted Redshank.—Two specimens were shot on Breydon on the 12th and 22nd of this month, the former a darkish bird in change of plumage, and the latter a bird of the year.

Marsh Harrier.—One taken near Hoveton Broad about the middle of the month.

NOVEMBER.

Mule Pheasant.—A remarkably fine example of the assumption of male plumage by the hen Pheasant was shown me on the 21st,

the head and throat being far more glossy than is usual in such birds, and the feathers of the back and under parts were of a peculiarly rich coppery tint. The Chinese strain was forcibly shown on each side of the neck by a marked patch of white, as in old cock birds.

Eagle.—A bird of this kind, most probably a Sea Eagle, was seen on the 22nd in the parish of Burlingham.

Woodcock.—We had no Woodcocks to speak of till after the 24th, when, after a long continuance of winds from the S. and S.W., it changed suddenly to N. and N.W., with a slight frost. A good sprinkling was then reported from various parts of the coast, and others have been met with since. Five or six couples were in Norwich Market for sale on December 1st.

DECEMBER.

Great Northern Diver.—An immature bird of this species was killed on the 13th as far up the Yare as the entrance to Surlingham Broad.

Late Swallow.—A young bird fell down the shaft of a chimney in this city on the 9th December.

Great Gray Shrike.—An adult female of this species was shot at Flordon about the 18th.

ARRIVAL AND DEPARTURE OF MIGRANTS, AS OBSERVED CHIEFLY IN THE VICINITY OF CROMER AND NORWICH.

August 16th. On this early date, about 10 A.M., a very considerable number of House Martins collected on the roof of a chapel close to the City Gaol, at Norwich, from whence, in about an hour's time, they took their departure; and after this date only a few stragglers were seen on that side of the city.

„ 29th. Swifts last seen at Norwich.

September 9th. Last Wheatear seen at Northrepps.

„ 13th. Several Turtle Doves seen at Northrepps.

„ 15th. Last Redstart seen at Northrepps.

„ 16th. Last Spotted Flycatcher seen at Northrepps; at Norwich on the 9th.

October 2nd. A few Hooded Crows seen, apparently first migratory arrival.

„ 6th. Hooded Crows seen all day passing westward.

October 11th. Large flocks of Starlings seen at Northrepps going westward.

„ 12th. A very considerable flock of brown Linnets in the “Earlham fields” near Norwich.

„ 14th. A stream of migrants was observed on the coast at Hunstanton, arriving almost continuously throughout the day, and passing inland, strong on the wing. These arrivals consisted of Larks, Starlings, green and brown Linnets, Chaffinches, Missel Thrushes, Carrion Crows, and Rooks. The numbers of each species observed varied, considerably, from small flocks to three or four individuals, the first four largely predominating, but the Sky Larks, though coming in dribblets, exceeded all in numbers the day through. All flying steadily in the “eye of the wind,” from S. to N.

„ 18th. Large flocks of Sky Larks seen at Northrepps going westward.

„ 20th. Two small flocks of Rooks seen struggling inland, at Lowestoft, against a strong breeze from the S.W.

„ 24th. Between 11 and 12.40 A.M. two flocks of Starlings, three of Sky Larks, and one of supposed Greenfinches, were seen to arrive on the coast between Lowestoft and Pakefield, within the range of a quarter of a mile, and, rising as they topped the billows, passed high over the cliffs, flying strong inland. Wind fresh from W.S.W., but more West than South, and so directly were these birds flying in the “eye of the wind” that three flocks passed nearly over a flagstaff, with its weather-cock pointing away from the sea. A Swallow and two House Martins were flying over the beach at the same time, and the grassy slopes of the cliffs were alive with Rock Pipits, not observed the day before.

November 8th. A Hobby seen, going inland, at Northrepps.

„ 10th. A Common Buzzard seen at Northrepps.

„ 13th. A few Fieldfares seen, going inland, at Northrepps.

„ 19th. A large quantity of Wood Pigeons seen, going inland, at Northrepps.

„ 21st. A large quantity of Fieldfares, going inland, and a few Golden Plover, seen at Northrepps.

„ 26th to 28th. Flocks of Lapwings, going west, seen at Northrepps.

Siskins apparently plentiful early in December; but, as far as I can ascertain, no Mealy Redpolls this winter.

AUTUMNAL MIGRATION OF BIRDS ON THE N.E. COAST.

BY JOHN CORDEAUX.

THE autumn of 1877 was in some respects peculiar; the temperature was exceedingly mild, with a long succession of winds, blowing with greater or lesser force from points varying from W.N.W. to S.S.E. From the middle of September to the end of November there was not a single gale, or even a strong breeze, from the N., N.E. or E. This long continuance of favourable passage winds for the birds caused our immigrants to pass forward without alighting on any part of our east coast district; consequently we saw very little of them, and the season was comparatively barren of incident. Mr. Gätke says this also has been the case in Heligoland. "There has," he writes, "never been so wretched an autumn since I have lived on this rock—now forty years."

Knots, birds of the year, appeared on the Humber flats on the 24th August, and about the same date we had large arrivals of Redshanks. In fact, this latter species was extremely plentiful throughout the Humber district, both on the Yorkshire and Lincolnshire coasts. Mr. Boyes, of Beverley, informs me that he saw an immense flock of Redshanks at Spurn on the 12th September, four or five hundred together; and when I was there, a month later, the Redshanks were by far the commonest of any birds on the coast.

The autumn of 1876 was remarkable for the great flight of Short-eared Owls between North Durham and the Wash, also further south. In 1877 they were altogether wanting, and no wonder after the warm reception they then met with. The bulk of the immigrants, which ought to have gone northward again in the spring, were immediately shot down and converted into hand-screens. On the whole coast line I only heard of four—namely, one on the 1st October in this parish, one at Spurn in October, and two owls which passed over the Tees floating lightship on the 21st October probably belonged to this species.

The first Hooded Crows were seen on the 7th October. They came in greater numbers than usual from this date to the end of November, at intervals.

Snow Buntings were seen at Spurn at the end of the second week in October. On the 17th I only saw two, both fine adults,

during a long day's ramble at Spurn and on the Yorkshire coast. Large flocks, composed almost entirely of immature birds, came into the east-coast stubbles during the last week in November.

It has been a wretched Woodcock season—not for the cocks, but for the sportsmen. The earliest I heard of was shot at Seaton Snook, Durham, on the 5th October. Very few have been noticed at Flamborough. At Spurn I hear of four having been seen, and in East Lincolnshire of only two or three. The great flight probably arrived on the Durham coast on the 20th and 21st October, as will be seen from the lighthouse notes at the end of this paper.

Like the Woodcocks, the "Woodcock-pilots," as the Little Gold-crested Wren is called, have been equally conspicuous by their absence, and scarcely any have been reported by my correspondents from any part of the north-east coast between Spurn and North Durham.

The Common Wren was very plentifully distributed on the "marram"-covered sand-dunes of Spurn on the 17th and 18th October. Mr. Gätke, writing November 14th, says, "My garden has been swarming to-day with them. Not only are they very common here during both periods of migration, but some, quite content and happy, stay with us all the winter."

The first flocks of Fieldfares, twenty and thirty together, appeared at Great Cotes during the last week in October. At Spurn flocks of Fieldfares came in on the 18th.

The most remarkable immigration, extending over about six weeks, has been that of the Blackbirds. The first flights must have arrived on our coast during, or directly after, the great gale from the S.W. on the night of October 14th. There was a great rush of Blackbirds coming from the north on or about the 26th November. On the morning of the 27th we had unusual numbers of migratory Blackbirds, almost approaching to flocks, in the hedgerows nearest the coast; these only remained about twenty-four hours, and then resumed their journey. From Spurn Lighthouse the Principal reports to me as follows:—"Nov. 26th, 4 P. M. Wind S., gentle breeze and misty drizzle. Blackbirds continually passing to the westward." From Flamborough Head Lighthouse I also find, as reported by the Principal—"Nov. 26th. Blackbirds about sixty in number; hour of striking 8.30 P. M. Wind S.W., fresh breeze, misty." Also others on the night of the 27th and 29th. From Whitby North Lighthouse the Principal writes at the same

date—namely, the last week in November—"We had a great many Blackbirds, with a few Thrushes, also Yellowhammers and green Linnets." A few Redwings came in with the early Blackbirds and Thrushes; very few, however, compared with the usual number we see at this season.

Grey Wagtails were in considerable numbers during the last half of September and early in October.

Mr. Gätke, writing November 14th, says, "Wind still S.W., but moderate, and although cloudy there is no rain. During the night there was a great rush of Thrushes, Larks, Lapwings, Robins, and Fire-crested Wrens (both *Reguli*), intermixed with lots of other birds. * * * What do we read out of this? That there is in the north an appearance of winter driving off the rear migration helter-skelter." On our English coast the great bulk of the migrants appear to have come in during the last fortnight in October.

Professor Newton has sent me the following interesting note on the migration of birds along the Norfolk coast near Hunstanton, as witnessed by himself on the morning of October 14th:—"Larks, Starlings, green and brown Linnets were the chief; there were also Chaffinches and three Mistletoe Thrushes. All flew steadily in the wind's eye (allowing for the variations of the shore line), pretty nearly due south. I was out from 8.30 to 11, and during that time the passage of the birds first named was nearly continuous; then there seemed to be a pause, and for some hours birds appeared intermittently; but between 3 and 4 in the afternoon the stream was nearly as continuous (though the numbers were certainly smaller) as in the morning. Larks were by far the most numerous; I should say they outnumbered all the rest put together, yet I never saw above six or eight in company."

The most interesting portion of Professor Newton's note refers to thirteen Carrion Crows—a bird not generally considered a migrant. He says, "At first I was inclined to think them Rooks (not long before I had seen seven Rooks coming across the Wash as straight as the wind would allow), but two or three of the party came so close to me that I could be quite certain as to this species. Of course I had binoculars."

The following notes, received through the kindness of correspondents, are from the three principal lighthouse stations on our N.E. coast—namely, Spurn Point, Flamborough, and the Tees-mouth. From other stations I have had little worthy of notice.

SPURN LIGHTHOUSE.

Oct. 9th. 10 A.M.; wind N.N.E., fresh breeze and clear. A Woodcock seen.—Noon; wind S.W., gentle breeze. Flock of Snow Buntings.

„ 13th. 3 P.M.; wind S.S.W., strong breeze and clear. Flock of Pochard ducks (?) passed lighthouse.

„ 14th. 7 A.M.; wind S.W., strong breeze and cloudy. First Grey Goose.

„ 18th. 2 P.M.; wind S.S.W., fine and slight breeze. Flocks of Fieldfares.

„ 20th. Noon; wind S.W., light breeze and fine. A Jack Snipe.

„ 23rd. 2 P.M.; wind S.S.E., fresh breeze and fine. Flocks of Norwegian Crows.

Nov. 3rd. 3 P.M.; wind W., gentle breeze and cloudy. Some Blackbirds.

„ 26th. 4 P.M.; wind S., gentle breeze and misty drizzle. Blackbirds continually passing to the westward.

During October and November the only birds which actually struck the lantern and were killed were one Fieldfare, one Blackbird, and two Dunlins.

FLAMBOROUGH HEAD LIGHTHOUSE.

Oct. 10th. Two or three dozen Thrushes and Larks came against glass of lantern. Wind W.S.W., strength moderate, overcast.

Nov. 2nd. Several dozen Fieldfares, Thrushes and Starlings came round the lantern at 10.35 P.M., and continued flying around the glass till 2 A.M. on the 3rd. Wind S.W., overcast, raining, moderate breeze.

„ 15th. Fieldfares, one dozen; Thrushes about two dozen. Hour of striking 1.15 A.M. Wind S.S.W., moderate gale, overcast, squally and rain.

„ 26th. Blackbirds, about sixty in number. Hour of striking 8.30 P.M. Wind S.W., fresh breeze, misty.

„ 27th. Blackbirds, two or three dozen; struck at intervals between 7 and 8 P.M. Wind W.S.W., moderate breeze, misty.

„ 29th. Blackbirds, eight or nine. Hour of striking 7 to 8 P.M. Wind S.W., strong breeze, cloudy.

About a dozen each time were killed and picked up, the rest flying away; with the exception of the last flock (29th) that passed, none were killed.

TEES No. 5 BUOY FLOATING LIGHTSHIP.

Oct. 9th. N., fresh breeze, cloudy; barometer at noon 30.20; thermometer 50. Large flocks of Grey Geese came into the Tees.

Oct. 12th. Moderate breeze from the W.S.W., cloudy; barometer at noon 29·68; thermometer 46. Large flocks of Geese came in this day, and some Crows.

„ 20th. W., light breeze, with rain; bar. at noon 29·97; ther. 54. Great many Woodcocks came over this day; large flocks of wild Geese and some Ducks.

„ 21st. Moderate breeze from the S.W. and rainy; bar. 29·85; ther. 56. Great many Woodcocks and two Owls came over to-day.

„ 27th. Strong breeze and cloudy; bar. at noon 29·60; ther. 58. Two Woodcocks and great many Crows this day. Large flocks of Lapwings came in from E. all day; also large flocks of wild ducks and a great variety of other small birds—they appear to come in from E.S.E. I never observed so many birds come over in one day before. J. F. shot twenty-nine ducks at one shot this day.*

Nov. 13th. Light breeze and hazy; bar. at noon 29·20; ther. 48. Two Woodcocks.

„ 22nd. Strong breeze and cloudy from the S.W. to W.S.W.; bar. 29·10; ther. at noon 46. Eight Sheldrakes and two Mergansers.

„ 23rd. W.N.W., gale, cloudy; bar. 29·10; ther. at noon 48. Four Scoter ducks and a great many wild geese.

We have had very few rare captures on the coast this autumn, compared with what is generally the case. Mr. Bailey, of Flamborough, writes on the 22nd October, “The other day I saw several Storm Petrels off the Headland.” Subsequently (but I neglected at the time taking the date) Mr. Bailey shot a mature male of the Long-tailed Duck, a *Harelda*, off Flamborough. Mr. Lawton, the innkeeper, of Easington, on the Yorkshire coast, six miles north of the Spurn, on November 4th or 5th, shot a very fine example of *Pastor roseus*. I examined this bird in the flesh; it was in autumn plumage, the edges of the salmon-coloured feathers on the shoulders and back being fringed with a dirty snuff-brown, giving those parts the appearance of being smeared with dirt.

* Species not stated by my correspondent.

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

ON the 10th September the harbour was full of young and old Herring Gulls with many Black-headed Gulls amongst them, the latter having lately arrived from their breeding stations. Three Curlew Sandpipers that were killed from a flock of about fifty were sent up from the neighbourhood of Wadebridge, Cornwall, about the same time. They were young birds of the year, with a rather strong tinge of buff pervading the under plumage. I once saw a compact flock, consisting of more than a hundred, flying across the mud-banks of the River Lynher, near St. Germans, the species being easily distinguished by the white upper tail-coverts. Very small parties or single birds are, however, more generally met with, either alone or in company with Dunlins and Ring Plovers. Some young Knots and Common Redshanks were also shot about the same time in our estuaries. Wheatears were then plentiful on the coast.

Visiting Northmoor, Somerset, during September, I found the Common Bunting rather numerous in that neighbourhood, quite a flock of them roosting nightly in a thick row of pollard willow trees skirting a "drove" in the centre of the moor. Indeed I do not think I ever observed what may be called a "flock" of the Common Bunting before.

On the 4th October I am almost certain that I saw amongst a party of Long-tailed Tits one with a white head,—a variety, I believe, not uncommon in some parts of the Continent,—and a few years since, strange to say, I remarked another in the same locality, which was duly recorded at the time in 'The Zoologist' (1872, p. 2943). Bewick mentions that there was a variety of the kind in the Wycliffe Museum.

The last Swallows were seen by me on October 15th, the day after the great gale, and on the 16th a single Martin was observed hawking about during a hail-storm. A white Swallow was seen in September. Swifts left the neighbourhood of Plymouth very early this season, and Swallows were by no means plentiful, which has been the case for the last few years. Swifts are decidedly on the increase.

A beautiful variety of the Common Linnet came under my notice this month. It was evidently an adult male, as some of the crimson feathers were still visible on the breast; but the greater part of its plumage was pure white, with only a few of the usual brown feathers on the wings and back.

Wild Geese made their appearance unusually early on some of the Cornish moors. On October 29th two Cravat or Canada Geese were seen swimming for some time in Plymouth Sound, but after awhile flew off seaward. The same day I observed the first Great Northern Diver of the season, and the next day two of these fine birds were killed. I had been much interested in watching one of them having a rather hard struggle with a Bullhead or "Father-lasher," *Cottus scorpius*, which it ultimately managed to swallow. I have often observed that both Cormorants and Divers have much trouble in managing this formidable little fish. Northern Divers have made their appearance early this season, as they seldom visit the Sound before November.

A young Gannet, in its beautiful spotted plumage, was brought in by some fishermen, who said that it allowed them to take it up from the water without resistance; so I suppose it must by some means have become exhausted, as there was no wound to be found on any part of its body. Gannets are said to be sometimes so gorged with fish as to be unable to rise from the water for a time, but such was certainly not the case in the present instance. I have often thought it strange that birds in the spotted plumage are so seldom met with, at least on this part of the coast. Old ones, on the contrary, are frequently obtained.

Two Common Buzzards, some Short-eared Owls, and a female Peregrine were captured in October near Plymouth, the last-named in Newnham Park. Shags were particularly plentiful on the coast; but, strange to say, I neither saw nor heard of a Tern or Phalarope. Kingfishers were rather numerous in our bays and estuaries, and many, I am sorry to say, were killed.

After some severe gales, on November 1st, I visited the neighbourhood of Bovisand and the Reannies Rocks, upon which latter were a large number of Cormorants and Shags, and immense flocks of Starlings and Rock Pipits, feeding amongst the numerous heaps of decaying seaweed collected on the shore for the purpose of dressing the land. It was quite surprising to see the "clouds" of Dunlins and Ring Dotterels resting on the Breakwater during

the time the mudbanks of our estuaries and rivers were covered at high-water, but directly the tide began to fall off they all flew in separate flocks to their various feeding-grounds. During very rough weather, when the sea washes over the Breakwater, thousands of these birds settle on the uncovered rocks close by the shore or upon the grassy slopes of the adjoining cliffs, a few Sanderlings and other waders often accompanying them.

On the 1st November two Dartford Warblers were seen at Mount Botten, and one of them was captured by a birdcatcher; specimens may be found in the furze-brakes of that locality almost every year. Black Redstarts made their appearance on the 3rd, when I noticed two immature birds at the Devil's Point, Stonehouse, and a Common Redshank near the same place.

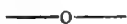
On Saturday, November 10th, a fine adult Norfolk Plover was killed in a turnip-field at Chevioc, near St. Germans. The man who shot this bird remarked that it ran very fast. The upper part of the tarsus in this specimen was not at all thick, as in young birds of the year, and upon examination I found its stomach to contain the remains of a dung-beetle and a solitary grain of barley. I remember only three instances of the Norfolk Plover having been obtained in the neighbourhood of Plymouth, and all late in the autumn. One was confined in a garden for some time, but eventually made its escape.

A beautiful Grey Phalarope, in full winter plumage, was killed in Plymouth Sound on November 13th, the first I had heard of during the autumn, notwithstanding the late severe gales. A Common Sandpiper was also shot on the same day—rather late in the season for both these birds. Kingfishers did not leave the open sea coast during the whole of the rough weather, but merely sought the quiet pools among the rocks in which to fish, and when moving from place to place were to be seen shooting over the waves like veritable sea-birds. Many Oystercatchers were seen on the Breakwater, and I observed large flocks of Lapwings overland.

During November the stormy weather brought several species of wild fowl on the coast. In the first place, many White-fronted Geese were killed on the Cornish moors, and on the 26th there were five Sheldrakes, some Shovellers, besides Teal and Wigeon in our markets—all obtained, I was told, from the neighbouring rivers and estuaries. Most of these birds were the young of the year, but one Sheldrake was adult, and one of the Shovellers a young male in

that state of plumage in which the breast is so prettily varied with dark lunate markings on a white ground.

Almost daily during the month of November I observed one or more Black Redstarts. Black-backed Gulls began to arrive in the first week of December, and will increase in numbers until spring, when their place will be taken by the Lesser Black-backed species just before the breeding season.



OCCASIONAL NOTES.

HYDROPHOBIA FROM THE BITE OF A POLECAT.—In the journal of Robert Marsham, F.R.S., under the date of 1739, the following curious passage occurs, which, by the kindness of the Rev. H. P. Marsham, I am allowed to make public. Hydrophobia from such a source, in this country, is quite new to me, and even if not altogether unknown, it is at least, happily, of such rare occurrence as to render it worth recording. The passage is as follows:—"This Sum^r: a poor Girl, eleven years old, being order'd by her Father (Short), in Coltishal, to keep ye Birds off his Wheat, ye Child carry'd with her some Baby-cloths, and a pan of water to wash them; but a Polecat came from ye Hedge, and, as ye Girl thought, wou'd have drank of ye water. She struck at ye Polecat; upon which it seiz'd her Arm, and hung by ye Teeth, 'till two neibours, allarm'd by ye cries of ye Girl, came to her assistance, seiz'd and kill'd ye Polecat. A Plaister was apply'd to ye sore place, and ye Girl soon became easy and well. But about eleven weeks after this accident happen'd the Girl complain'd of pain in her Arm, where she had been bit. This pain mov'd from her Arm to her Heart; and she complain'd of great heaviness, and soon had the Hydrophobia in the most dreadful manner, complaining of ye most excessive thirst, yet cou'd not bear ye sight of water; it convuls'd her only to look at it. She expir'd in this dismal manner, after she had been ill three Days. The pain seiz'd her Arm ye day before, and she dy'd ye day after ye full of ye Moon, Oct. 6, 1739. Before she expir'd she desir'd ye People to keep out of her reach; for she fear'd she shou'd bite them. I had this account from Mr. J. Ives, of ye same Town, Landlord to ye unfortunate Father of ye Girl, and by Mr. Negus that attended ye Girl; both Gent^l of very good character." Dr. Elliott Coues, in his recently published '*Monograph of the North American Mustelidæ*,' republishes two papers which originally appeared in the '*American Journal of Science and Art*,' on "Hydrophobia from Skunk-bite." To this book I may refer your readers, as this is perhaps not the place for a discussion on the subject, merely calling attention to the similarity of the symptoms in both cases, and the singularly

fatal nature of the bite inflicted by the Skunk, *Mephitis mephitica*, when affected with what he terms *Rabies mephitica*; also that it appears in every instance there recorded the Skunk had either exhausted his "mephitic battery," or else had lost the projectile force by which it is discharged; and that when its natural means of defence is unimpaired it rarely has recourse to biting or assumes the aggressive.—T. SOUTHWELL (Norwich).

BOTTLE-NOSED DOLPHIN AT PLYMOUTH.—On the 9th November an adult specimen of the Bottle-nosed Dolphin, *Delphinus tursio*, measuring twelve feet in length, was washed up on the rocks beneath the Plymouth Hoe. The number of teeth on each side of either jaw are twenty-five, not acute, but truncated, proving the animal to be old, or at least quite mature. Having apparently been dead for some time, it was not in a fit state for preservation; but I am glad to state that Mr. Hearder, of Plymouth, who cut the animal up, carefully saved every bone, with the intention of making a skeleton. I know of but one other specimen of this Dolphin having been obtained in this locality, and that is now preserved in the Museum of the Plymouth Institution. The snout or beak of *Delphinus tursio* is much shorter than that of the Common Dolphin, *D. delphinus*, and the number of teeth about one half.—JOHN GATCOMBE (Durnford Street, Stonehouse).

GREAT GREY SHRIKE NESTING NEAR SALISBURY.—As I believe this bird has not been hitherto ascertained to breed in England, I think it is worth while mentioning the following circumstances, which have recently come to my knowledge. Mr. Norwood, of Salisbury, who is a keen and intelligent observer of birds, told me he knew a man who some years ago had taken a nest of the Great Grey Shrike close to Salisbury, and who had very accurately described the birds and nest to him. I asked him if he would kindly write to his friend and get me an account of it, when Mr. W. King, of Devonport, the person referred to, replied as follows:—"The Grey Shrike's nest was taken by me about the end of May or beginning of June, 1839, about midway between the Gas-house wall and the river, called 'Picked Point,' on the left-hand side of the lane. The nest was built in the upright forks of a very strong thorn-hedge, interwoven with brambles. It was a large, compact nest, composed of dry grass, moss, and small fibrous roots on the outside, and lined with soft downy feathers, intermixed with a little hair. It contained four eggs, of a pale ash-colour,—I think about the colour of wood-ash,—thickly marked at the larger end with spots and stripes, or blotches of a yellowish red colour. My cousin, since dead, was with me at the time, and at first I tried to lift him up to the nest; but the old birds came flying round our heads, and screaming at such a rate that we were

afraid of them, and I let him drop. We then commenced driving them away with sticks and dry cow-dung, and succeeded in driving them to some trees at a little distance. I then took the nest myself by cutting away some of the bushes; but before I could get at it the old birds came back again with greater fury. Sometimes they would come at our heads like an arrow,—so quick that we could scarcely see them, almost touching our heads,—and at the same time uttering a loud shriek and making a whirring noise with their wings. They continued to fly round us until we got quite out of the field by the Gas-house wall. I also shot a Grey Shrike at Milford,—I think it was about the beginning of September, 1848,—as it was perched on an ash tree on a high bank on the right-hand side of a lane leading from Milford Bridge to Clarendon. There were two of the birds in the same tree; when I shot one, the other flew down like a stone into the thick hedge; but before I could reload the gun it made off into a thick wood on the other side of the field towards Laverstock. I took the bird home, and it was there for a day or two; I then threw it away, as I did not know anyone in Salisbury who stuffed birds at that time. As near as I can remember it, the bird was about nine or ten inches long from the tip of the bill to the tip of the tail; bill black, thick and strong, about an inch long; back of a pale ash-colour; wings and tail black, varied or tipped with white; throat, breast and belly of a dirty white; legs and feet black; also a black mark running from the corner of the mouth, or base of the bill, across the eye to the neck, on each side of the head. I am certain that this was the same kind of bird that I took the nest of in Gas Lane.” Wishing to obtain some further information concerning this occurrence, I wrote to Mr. King again, asking him various questions on certain points, as to date, and his means of knowing the kind of bird and nest at the time of his taking it. He replied that he took the nest in 1839, when he was a boy of fourteen, and he remembered the date accurately by his going to France for some time in the ensuing year. Not having seen a nest like it before, he took it to an old man named Kite, a shoemaker, who was a bird-fancier and bird-catcher, and he told him it was the nest of the Great Grey Butcher-bird—a very rare bird in England. The eggs he gave to his cousin, and they were, alas! strung on a string with many others, as was the custom with boys in those days. During the five years King was in France he saw several of the same species, and on one occasion pointed them out to a person named W. Stone, who said he had been an under-keeper near Marlborough, and had shot a pair of the same birds there, and that the young gentlemen (from the College presumably) had told him they were Great Grey Shrikes. Mr. King, in reply to my enquiry, added that he knew the Red-backed Butcher-bird well, and that he had shot specimens of that kind as well, and said that he “should surely know the birds one from another, as there is so much difference in colour.” He further mentioned that

about 1853 a man named Hart came from Christchurch and settled in Salisbury, and meeting him one day he mentioned the fact of his having shot and also taken the nest of the Great Grey Shrike, upon which Hart (a member of the family now well known as birdstuffers and naturalists at Christchurch and Bournemouth) asked him if he should know the bird again if he saw it; to which King replied that he should know it from a hundred different kinds of birds, and on Hart taking him into his room where his collection of birds was kept, King at once pointed out the Grey Shrike as the bird he had both taken the nest of and shot. The occurrence of the Great Grey Shrike in our more immediate neighbourhood is not uncommon. I have a specimen myself that was shot in the Easter week of 1876 at Bishopstowe, about seven miles from here; and a pair were trapped last winter in our water-meadows at Britford, one of which was kept alive by a man in Salisbury for some little time, until the poor creature died, probably from starvation. Mr. Norwood also informs me that some years back a pair of these birds were shot in Hurstbourne Park, near Whitechurch, by one of Lord Portsmouth's keepers named Ford. He killed them during the month of May, as they were flying amongst some large bushes, and this being late in the year for their appearance amongst us it would seem probable that they were about to breed.—ARTHUR P. MORRES (Britford Vicarage, Salisbury).

COMMON AND ROUGH-LEGGED BUZZARDS IN KIRCUDBRIGHTSHIRE.—During the past autumn Buzzards have made great additions to their ordinary numbers in the south-west of Scotland. There are, in the county of Kircudbright, several spots where, as I know the nests myself, there is no doubt that the Common Buzzard breeds every year; but, irrespective of these, stragglers seem to have occurred in many parts of the district. Several Rough-legged Buzzards have also been trapped and shot during the autumn months; and there is, I have good reason to believe, a regular autumnal movement of both these species to various parts of Scotland. It remains, however, an open question as to where they come from, but they appear to move from east to west.—ALEXANDER CLARK-KENNEDY (late Captain Coldstream Guards, Guards' Club, S.W.).

BRENT GOOSE IN BEDFORDSHIRE.—An adult male Brent Goose, *Bernicla brenta*, was shot by a man named Bennett at an osier-bed quite close to this town, and the birdstuffer here has it for preservation. A man at Banbury, the birdstuffer, a most intelligent man, well acquainted with birds, assures me that he had one to stuff some nineteen years ago, which was killed at Warkworth, in Oxfordshire. It is curious that this species should be found so far inland. Since writing the above, hearing I was interested in the Brent Goose, a man called to inform me that as he was on the embankment near this town, on the first Sunday in December, he saw

the Brent Goose come out of the osier-bed; another then appeared, and he watched the pair for some time. They were very tame. Bennett is a well-known gunner here. He keeps a shooting-punt with a punt-gun, the only one on the river. As he had just started for a trip on the Monday, he was surprised to see a strange bird get up and fly into the osier-bed; he then approached in the boat and shot it. I am told that the other was then at Great Barford, a few miles down the river. The second instance, of course, is not near so important as the first, where the bird was actually obtained. The birdstuffer also brought me a Willow Wren, which had evidently been but a short time set up. He assured me that it was brought to him in the flesh on the 21st December.—C. MATTHEW PRIOR (Bedford).

SCARCITY OF THE CORN CRAKE.—With regard to this subject, noted in 'The Zoologist' by the Rev. Murray A. Mathew, my brother, and Mr. Leach, I may remark that in this district, where Corn Crakes were at one time considered common, I never once during the past year (though out constantly) heard the familiar note or knew of a nest being found. The only example of the species that I met with, I killed when shooting in the New Forest on October 18th.—C. BYGRAVE WHARTON (Hounslow, Totton, Hants).

SCARCITY OF THE CORN CRAKE.—I can confirm the experience of other observers as to the scarcity of the Corn Crake in various parts of the country during the summer and autumn of 1877. During the month of September I was shooting over about 3000 acres in Essex, and although I walked over some very likely ground, with here and there a good bit of clover-seed, I never saw a single Corn Crake. Similarly, when shooting, during the last week of September, in Suffolk, near Saxmundham, over good partridge-ground, where the bag was never less than fifteen brace of birds a-day, besides rabbits and hares, not a single Rail was flushed, notwithstanding the repeated attempts of three good spaniels to find one. In Sussex and Hampshire in former years I have sometimes shot five or six in a day, and in Middlesex at one time this bird was one of the commonest of our summer migrants, its incessant "crake, crake," during the months of May and June, being heard all day long, and very frequently far into the night.—J. E. HARTING.

DUNLINS IN BEDFORDSHIRE IN DECEMBER.—When shooting near Bedford, on the 24th December last, I was surprised to see a small flock of Dunlins flying past. I killed one of them, which came rather nearer to me than the rest, and thought at the time it was but a migratory movement. I observed them again, however, on the 31st, and am told that they have been some time in the vicinity. On dissection of the specimen killed, it appeared that the stomach was quite full of river or brook slime, mixed with

some minute white grits. The bird was very fat. I have since learned that a considerable number were always to be found on the irrigation land near this town last winter. A friend who owns the shooting informed me that he must have shot close upon twenty couple last year.—C. MATTHEW PRIOR (Bedford).

LITTLE AUK IN NOTTINGHAMSHIRE.—About the end of November last a gamekeeper near Mansfield picked up a Little Auk under the telegraph-wires, which had evidently killed itself by flying against them. The bird having been carried about for several days was in a bad state, and the back of the head had been nearly cut off by the wire. I am having it set up, however, as well as it can be done, for it is remarkable that such a bird should be found so far inland, the place being quite fifty miles from the sea. Its occurrence, no doubt, is due to the rough winds we had about that time. A boy going into the birdstuffer's a few days afterwards, on seeing the bird, said he had seen another like it, which was found about the same time.—J. WHITAKER (Rainworth Lodge, Mansfield).

KITTIWAKE IN BEDFORDSHIRE.—On the 31st December I killed a Kittiwake within the borough boundaries of this town. I was returning home, and saw the bird skimming over a grass-field by the road. Not knowing what it was, I shot it, when it proved to be an adult bird of the above species. Owing to the open weather, wild fowl are scarce; but Golden Plovers and Lapwings are very common. I have not heard of any rarities.—C. MATTHEW PRIOR (Bedford).

CORRECTION OF ERRORS.—If not too late, I should feel obliged by your permitting me to point out the following errors in my "Birds of the Moy Estuary" (3rd ser., vol. i.):—P. 234, Greenland Falcon; it was in the winter of 1862-63, instead of 1868, that the Belmullet bird was obtained. P. 237, Missel Thrush; for "seen in parks" read "seen in flocks" in September they are often mistaken for Fieldfares. P. 287, Green Sandpiper; it was on the 25th August, 1873, not 1874, that Mr. More shot his specimen of this bird. P. 287, Greenshank; for "probably breeds on some of the little bay-lakes" read "bog-lakes."—ROBERT WARREN (Moyview, Ballina, County Mayo).

MORRIS'S TAPE-FISH AT PENNAN, ABERDEENSHIRE.—A very fine specimen of the above fish, *Leptocephalus Morrisii*, over six inches in length, was picked up from the beach at Pennan (sometimes spelt "Pennant") on January 8th, by Mr. Ferguson, Inspector of the Coastguard Station there. It was alive when found and continued so for some time after. I am not aware if the species has been found on the Aberdeenshire coast before, but

I do not think it has been met with on the coast of Banffshire.—THOMAS EDWARD (Banff).

[Couch, who calls it "The Morris" and the "Anglesea Morris," from the name of the discoverer and the place where it was found, says (vol. iv., p. 348) it has been met with round the whole extent of the British coast, even to Caithness, where an example was obtained by Mr. Peach.—ED.]

RED MULLET IN DECEMBER.—The occurrence of Red Mullet, *Mullus surmuletus*, at this season of the year, in British waters is exceedingly rare, if not unprecedented; yet I have to record the capture in our Bay, on the 24th December, of the largest recorded specimen. It appeared to be in excellent condition, measuring 1 foot 4 inches over all; in length, 1 ft. $\frac{1}{2}$ in. from eye to fork; its greatest girth, $10\frac{1}{2}$ inches; and its weight, 42 ounces. This enormous weight, of two pounds ten ounces, has never, I believe, been observed before of this fish in British Seas.—THOMAS CORNISH (Penzance).

ABNORMAL GROWTH OF A NEW ZEALAND LAND SNAIL. — A very remarkable specimen of a rare shell, *Paryphanta Hochsetteri* (Pfeiffer), was presented to the British Museum last year by Mr. T. L. Travers. It was collected in the same part of New Zealand whence the first described example came. The exact locality is the Whakamarama range of mountains, which are situated north-west of Nelson. The shell was very much crushed when received by the Museum, yet not absolutely broken, with the exception of the apical whorls, which were completely smashed into the cavity of the penultimate whorl. The peculiarity of the specimen consists in the flexibility of its substance, and the total absence of the shelly deposit which lines the interior of normal specimens, thus producing a somewhat solid and unpliant structure. On immersion in boiling water it speedily became pliant, and I was consequently enabled to restore it to its probable natural form by stuffing it with wool. This curious flexible texture, resembling in a remarkable degree the husk of a chestnut, both as regards colour and pliancy, at first led me to conclude that it was a new and very strange form. However, subsequent and more careful examination and comparison of it with *P. Hochsetteri* convinced me that it was a specimen (about half the size of a full-grown one) of that species which, through some unpropitious circumstance, had been reared in a situation where it was unable to obtain the quota of carbonate of lime requisite for the production of the internal shelly lining. Although there are other differences, such as the absence of yellowish colour in the epidermis, except around the middle of the body-whorl, where there are traces of it, and the lack of subgranulation on the upper surface, I think these may be ascribed to individual variation, and not accounted specific distinctions. Both this species and *P. Busbyi*, also a

New Zealand form, are invested with a thick horny epidermis which is quite easily bent on the margin of the aperture, where the animal has not yet deposited the internal shelly enamel.—EDGAR A. SMITH (British Museum).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ZOOLOGICAL SOCIETY OF LONDON.

January 15, 1878.—R. HUDSON, Esq., F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of December, 1877, and called especial attention to a family of Gelada Baboons, *Cynocephalus gelada*, deposited by Mr. C. Hagenbeck on the 7th; and to a pair of Musk Deer, *Moschus moschiferus*, presented by Sir Richard Pollock, K.C.S.I., Commissioner at Peshawur, N.W.P., which arrived on the 15th.

A communication was read from Mr. Andrew Anderson, containing some corrections and additions to a former paper of his on the Raptorial Birds of the N.W. Provinces, read before the Society on the 21st March, 1876.

A communication was read from Mr. F. Moore, containing a revision of the genera and species of European and Asiatic Lepidoptera belonging to the family *Lithosiidæ*. The author characterized thirty-eight genera in this memoir, and gave the descriptions of eighty new species.

Mr. A. Boucard read a paper in which he gave a list of the birds he had collected during a recent expedition to Costa Rica. The number of birds collected during his five months' stay was about one thousand in number, representing two hundred and fifty species, amongst which were two new to science, *Zonotrichia Boucardi* and *Sapphironia Boucardi* of Mulsant, and many others of great rarity.

Two papers were read by Mr. G. French Angas. The first contained descriptions of seven new species of land shells recently collected in Costa Rica by Mr. A. Boucard. The second contained the description of a new species of *Latiaxis*, from an unknown locality, proposed to be called *L. elegans*.

A communication was read from Dr. H. Burmeister, containing notes on *Conurus hilaris* and other Parrots of the Argentine Republic.

A communication was read from Count Salvadori, in which an account was given of the birds collected during the voyage of H.M.S. 'Challenger,' at Ternate, Amboyna, Banda, the Ké Islands and the Aru Islands.

Professor Garrod read a paper on certain points in the anatomy of the *Momotidæ*, in which he adduced facts substantiating their affinities with the *Todidæ*, *Alcedinidæ*, and other *Piciformes*.

In a second paper Prof. Garrod described the extraordinary structure of the gizzard of the Fijian Fruit Pigeon, *Carpophaga latrans*, in connection with the fruit on which it feeds, that of *Oncocarpus vitiensis*.

A communication was read from Mr. Edgar A. Smith, containing the description of a new species of *Helix* from Japan, which he proposed to call *Helix (Camaena) congener*.

A communication was read from the Marquis of Tweeddale, containing an account of a collection of birds made by Mr. H. Everett in the Philippine Islands of Dinagat, Bazol, Nipak and Sakeryok. Six new species were named *Ceyx argentata*, *Hypothymis celestis*, *Mixornis capitalis*, *Dicæum schistaceum*, *D. Everetti*, and *Prionochilus olivaceus*.

A second paper by the Marquis of Tweeddale gave the description of a new genus and species of bird from the Philippine Island of Negros, for which the name *Dasycrotapha speciosa* was proposed.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

Annual Meeting, January 16, 1878.—Professor J. O. WESTWOOD, M.A., F.L.S., President, in the chair.

An abstract of the Treasurer's Accounts for 1877 was read by Mr. J. W. Dunning, one of the Auditors, showing a balance of £9 18s. in favour of the Society.

The Secretary read the Report of the Council for 1877.

An Address was then delivered by the President.

Prof. J. Wood-Mason and Mr. S. Stevens were appointed scrutineers.

The following Members of Council were elected for 1878:—H. W. Bates, G. C. Champion, J. W. Douglas, Rev. A. E. Eaton, F. Grut, R. Meldola, E. Saunders, J. Jenner Weir, Prof. J. O. Westwood, W. L. Distant, E. A. Fitch, G. Lewis, and F. Smith.

The following officers were subsequently elected:—President, H. W. Bates, F.L.S., F.Z.S.; Treasurer, J. Jenner Weir; Secretaries, R. Meldola and W. L. Distant; Librarian, F. Grut.

Mr. M'Lachlan proposed a cordial vote of thanks to the President, which was seconded by Mr. S. Stevens, and carried unanimously. A vote of thanks to the Officers and Council was proposed by Mr. Dunning, seconded by Mr. Fenn, and also carried unanimously.—R. MELDOLA, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The History of Harting, in the County of Sussex. By the Rev. H. D. GORDON, M.A., Rector and Vicar of the Parish; with a Chapter on the Geology of the District, by the late Sir RODERICK MURCHISON, Bart.; and some Notice of its Fauna and Flora, by JOHN WEAVER. 8vo, pp. 492. London: printed for the Authors, by W. Davy and Son, 8, Gilbert Street. 1877.

WHEN we consider the amount of rubbish which is annually printed in the shape of three volume novels, and the amount of time which is spent, or rather wasted, in the production of such ephemeral literature, it is refreshing to meet with an author who deals with facts instead of fancies, who rescues from oblivion scraps of local history, and places on record something that is worth reading and worth remembering.

What pleasanter occupation for a country clergyman, or indeed for any clergyman, in his leisure hours, than the collection of materials for a history of his own parish? To dip into 'Domesday,' pore over parish registers, consult county histories, and generally to collect and sift all sorts of information from all sorts of sources, must surely be one of the most agreeable modes of "driving dull care away," to say nothing of the utility of the work when finally completed.

Such an undertaking is not to be hastily dealt with or produced; and indeed of this class of work it may be said that the longer the author is engaged upon it the better it is likely to be. Ten years have elapsed since the late Sir Roderick Murchison, dealing with the "Geological Structure of the parish of Harting," penned the first thirteen pages of the present volume, and Mr. Gordon tells us (p. 230) that the preparation of his own share of the work has been "a pleasant holiday task for the last thirteen years." He calls it "a humble attempt to describe a corner parish in West Sussex of 7832 acres (nearly thirteen square miles), interesting in its flora and fauna, which, from their sheltered position and the variety of soil and climate, are unusually fertile, and also to unfold its remoter history, and incidentally that of its immediate neighbourhood."

As it does not fall within our province to deal with any history but Natural History, we do not propose to say much of the archaeological portion of this book, but to confine our remarks chiefly to a notice of the fauna and flora of the parish, with which the latter half of the volume is occupied. It may be observed, however, that in addition to what may be termed the ordinary sources of information, above indicated, Mr. Gordon has gleaned many curious details of the present history of Harting from a large collection of MSS. known as the "Caryll Correspondence" preserved in the British Museum, and relating to the affairs of one of the oldest Sussex families located at Harting. A curious history attaches to these papers, which were left behind when the last of the Carylls took service in the French army in 1767, and were accidentally discovered some years ago, together with a mass of other documents, stowed up in boxes, rotted with damp, and preyed upon by vermin.

From Mr. Gordon's point of view, the history of his parish is to be collected from the history of the three principal families who resided in it, the Husseys, the Fords, and the Carylls, and he has subdivided his subject accordingly. Referring to the connection between the English surname and the name of the parish, in its various forms of spelling, he remarks that William of Wykeham's first head master of Winchester College was Richard de Herton, "*venerabilis et discretus vir Richardus de Herton grammaticus*," as he is called in a deed of 1373, wherein he binds himself to William of Wykeham to teach the boys at Winchester for ten years. "Richard de Herton" would in modern form be "Richard Harting," "Herton" being the local pronunciation of the name at the present day.

It is perhaps not generally known that Gilbert White possessed property in this parish, for none of his biographers have referred to it. The fact is thus mentioned by Mr. Gordon :—

"For at least forty years (1754—1792) Gilbert White was an East Harting squire. The bulk of his property was at Woodhouse and Nye Woods, on the northern slope of East Harting, and bounded on the West by the road to Harting Station. The passenger from Harting to the railway has on his right, immediately opposite the 'Severals' Wood, Gilbert White's farm, extending nearly to the station. White had also other Harting lands. These were upon the Downs, viz.—a portion of the park of Uppark on the south side, and a portion of Kildevil Lane on the North Marden side of Harting Hill. Gilbert White was on his mother's side a Ford; and these

lands had been transmitted to him through his great uncle Oliver Whitby, nephew to Sir Edward Ford. Thus the little estate in East Harting was part of the family property of Gilbert White, and showed that he was kinsman to the great squires of East and West Harting, as the Carylls and Fords had intermarried.

"An interesting entry in his Account Book marks not only that he was intimate with the clergy here, but that in all probability he knew Harting at a very early period of his life:—

"'Feb. 2, 1754.* Gave Dr. Durnford's servant at Harting, 3s; Mrs. Newlin's maid 3s.' He was here evidently staying two nights in Harting; and for one of these resided at the house of the widow of honest old parson John Newlin. It is pretty certain, therefore, that he must have known old Mr. Newlin himself, who lived at Harting from the commencement of his incumbency as Vicar, 1731, to the time of his death, 1738. We may assume further, that, no doubt in consequence of his family connections, Gilbert White was quite at home in Harting from an early period of his life, and that his facts relating to the South Downs were collected here. The following draft of a codicil to the will of Gilbert White is preserved in his own handwriting:—

"'Whereas I, the Rev^d. Gilbert White, of Selborne, in the County of South'ton, Clerk, have duly made and executed my last Will and Testament in writing, bearing date the second day of November last, and whereas since executing my said Will I have suffered a recovery of my estate at East Harting, in the county of Sussex, now I do hereby give and devise unto my ——— all that, my Messuage, Farm Lands, Tenements and Hereditaments, with the appurtenances situate and being in the Parish of East Harting, otherwise Harting, in the county of Sussex, called or known by the several names of Deane's, Boyes', Woodhouse and Maxwell's or by whatsoever other name or names the same or any part thereof is called or known. To hold unto him my said ——— his Heirs and assigns for ever. And I do declare this to be a codicil to my said Will. Dated the — day of January, 1792."

Considering the many visits which Gilbert White must have paid to his property at Harting, it is somewhat singular that he has never mentioned it even by name in his 'Natural History of Selborne.' It is true that in writing an account of one parish he might have deemed it hardly relevant to record observations made in another, and that not an adjacent one, but at the same time one would almost have expected to find in his Letters some allusion to the rural scenery or the natural productions of a locality not far

* In Mr. Bell's recently published edition of White's 'Selborne' a transcript from one of Gilbert White's account-books is given, wherein this entry appears, under date Feb. 2, 1755 (vol. ii., p. 346).

distant from him, and which, as Mr. Weaver has shown in the present volume, possesses so many attractions for the zoologist and botanist. "Its richly wooded uplands, picturesque hangers and fertile valley' abound," he says, "in natural productions; and the enthusiastic naturalist may here find ample scope for a life-long study of its fauna and flora." That Mr. Weaver has paid considerable attention to both, is evident from his remarks, which extend over some 260 pages, and are divided into chapters on the quadrupeds, birds, fishes, reptiles, molluscs and insects which have been met with in the district, as well as on the timber trees, flowering plants, orchids, ferns, and Fungi.

We have marked many passages in the 'Natural History of Harting' as worth noting, but space will not admit of our alluding to more than a few of these.

Until very recently, the author assures us, he had been under the impression that the Water Vole subsisted exclusively on vegetables, chiefly aquatic plants and roots; and that, with the exception of its censurable habit of burrowing in the banks of the ponds, and a few unimportant pilferings at no great distance from its habitation, very little mischief could be justly laid to its charge. He has now, however, satisfied himself that this animal occasionally pursues and attacks young ducklings, an individual of this species having been caught and killed, *flagrante delicto*, and "identified beyond the possibility of a doubt."

In Murray's 'Handbook' for the county it is stated that the only pair of Ravens in Sussex is (or was) at Parham Park. This is an error. Mr. Weaver asserts that "the ravenhood of Uppark is a time-honoured institution, the origin of which is only to be guessed at." Until the spring of 1866 a pair nested annually at Harting, and whenever retributive justice, at the hands of a keeper, overtook their misdeeds, and one of the pair was shot, the survivor, after disappearing for a time, invariably returned with another partner. One year the eggs were taken, but in a very short time afterwards they had another nest, not two hundred yards from their favourite clump, and succeeded in rearing their young. So that it would seem to be a difficult affair to expel them, even if such a thing were attempted. In the early part of 1866, however, a furious hurricane from the south-west passed over the country and uprooted hundreds of trees in the park. Unfortunately one of the latter in its fall crashed into the very

tree in which the Ravens had established their home, and they have never nested there since. It would seem, nevertheless, that even now they are not quite proof against the charm of old association, as they have more than once paid a visit of two or three days to the park, and their rich mellow croak, as they loudly remind each other of the past, is still occasionally heard in their old familiar haunts among the beech woods.

In his very useful work, 'Pheasants for Coverts and Aviaries,' Mr. Tegetmeier has examined the evidence on the disputed question whether Rooks destroy Pheasants' eggs, and has detailed several instances (pp. 45, 46) in which they have been known to do so. Mr. Weaver finds the case proven, and records two instances in which Rooks were seen to visit Pheasants' nests and steal the eggs while the hens were actually sitting on them!

Jackdaws, too, are robbers in their way:—

"At the time of year when the Fallow Deer is doffing his winter suit to assume a new one—technically 'shedding his pens'—the Jackdaw finds it convenient to appropriate the rejected materials, as the best he can find, in sufficient quantity for the lining of his nest, and his proceedings on the occasion are characterized, in some individuals at least, by a singular absence of ceremony. Not content with the scattered tufts, which with a little industry he might collect from the trunks of trees, the fences, or any other object against which the deer has been rubbing himself, he actually has the supreme effrontery to tear off fragments of the worn-out coat from the very person of the owner, the latter, meanwhile, calmly watching the process of denudation as if it really ministered to his comfort. It is not unusual here in the nesting season to see from the drawing-room windows several Jackdaws at a time busily engaged on the backs of the deer, as they leisurely chew the cud while basking in the sunshine, and it is only when three or four of them, alighting on an old buck, pick a quarrel with each other and try conclusions on the spot, that they get a gentle admonition from one of the horns of the animal" (p. 263).

The Dartford Warbler has been observed at West Heath and on East Harting Down (p. 272), and we have met with it also just beyond the limits of the parish on Bepton Down.

The rarer Marsh Warbler (*Acrocephalus palustris*), which has lately been admitted into the list of British Birds as an occasional summer visitant, has on one occasion been found nesting in West Sussex (p. 276), and the Grey Wagtail, or "Winter Wagtail," as it is often called (*Motacilla boarula*) has been observed to breed in

the parish in the rocky bank of a stream formed by the waste water of Hurst Mill Pond.

The Wood Lark (*Alauda arborea*), whose song is more highly esteemed by many persons than that of the Sky Lark, is not uncommon in the district, but is much less numerous than the latter species, and much more local. "Scarcely a season passes," says Mr. Weaver, "but we meet with its nest on the ground among grass in Uppark and Lady Holt Park, at which time the bird may, of course, be frequently seen and heard; but we have particularly noticed that although in its musical soarings it not unfrequently passes and repasses the boundaries of the parks, it seldom strays far from either in the breeding season. On the other hand, large flocks of them may be seen towards the end of winter, before they have selected their several summer homes" (p. 278).

The Hawfinch, which is generally found in small parties in severe weather, has on a few occasions been found nesting in the parish; while at no great distance, in an easterly direction, it is said to be "permanently resident" (p. 282). The increase in the numbers of this bird of late years, and its extended distribution, has been noticed by observant naturalists in many different localities.

In the year 1776 the late Sir Harry Fetherstonhaugh imported from France several sittings of the eggs of the Red-legged Partridge, and in the subsequent correspondence between him and his mother we learn that the hatching was perfectly successful; several coveys were bred in the walled gardens attached to "Harting Place" and in the park; but the experiment to establish them here permanently seems to have failed. Mr. Weaver says:—

"We have a recollection of some forty years, during which we never heard of a single specimen having been found on the estate; and when, about the year 1860, one of the keepers discovered several eggs of the species on Castle Farm, he brought them in as the eggs of 'some furrin bird,' the like of which he had never seen before. Since then we have not only met with several in the Warren and on East Harting Farm (some deposited in nests of the Pheasant), but many of the birds have been shot on East Harting Down, where it has been no uncommon occurrence to put up a covey or two several seasons in succession. The species is said to be tolerably common in the neighbourhood of Butser Hill" (p. 287).

The Black Grouse is briefly alluded to as rare, "one or two

stragglers only having been shot here within the memory of middle-aged sportsmen" (p. 288).

The Heron is frequently seen at Down Park, sometimes in parties of five or six, but they are no doubt stragglers from the heronry at Parham Park. Two instances at least of the discovery of a Heron's nest—one in the fir clump on West Heath, the other on a tree at the pond-tail—are well authenticated, but the nests and eggs were unfortunately destroyed.

The Wild-duck and Teal both breed regularly in the parish, as do also the Moorhen, Coot, Water Rail, and Little Grebe. A particular description of the curious nest of the last-named bird is given on page 294.

We observe that, in giving the scientific names of the birds mentioned in his list, Mr. Weaver has adopted the nomenclature of Macgillivray. This is to be regretted, as the names bestowed by this accomplished naturalist never have been, and never will be, generally adopted. At the present day such names as *Pyrrhula pileata*, *Picus pipra* and *Picus striolatus* are quite unfamiliar even to practised ornithologists.

The chapter on Reptiles calls for no particular comment, unless it be to remark that Mr. Weaver has no evidence to offer on the much vexed question of vipers swallowing their young.

The indigenous fishes are too limited in the number of species to justify a lengthened notice of them; but we take it that any angler of moderate views would be satisfied to find in his parish Trout, Perch, Carp, Tench, Pike and Eels. In the autumn of 1858 nine hundred fine Carp were taken out of Harting Great Pond, one of which was of the extraordinary weight of twenty-four pounds and a half. This remarkable fish, of which an engraving is given (p. 304), from an oil painting made at the time of its capture, measured thirty-four inches in length, exclusive of the caudal fin, and many of the scales on its flanks behind the pectoral fins were larger than half-crown pieces. Harting, we believe, has long been celebrated for its fine carp, and doubtless, says Mr. Weaver, "a goodly number found their way to the refectory of the holy fathers of Durford Abbey in the sixteenth century, when the Great Pond extended over an area of probably thirty acres. It was reserved for the present age, however, to make the grand discovery that Harting was capable of producing a finer specimen of the genus than any other taken in British waters of which we have

an authentic record." This remarkable Carp is described and figured in Manley's 'Notes on Fish and Fishing' (p. 238), a book which has already been noticed in 'The Zoologist' (1877, p. 501), and the author says (p. 243), "I believe Mr. Weaver's Carp is the largest on record as taken in English waters, as it considerably 'tops' the nineteen and a half-pounds fish taken in the White Sitch Lake, and whose picture is still to be seen at Weston Hall, the seat of the Earl of Bradford in Staffordshire." He adds, "I believe, too, that the Harting Carp now figures for the first time in a book on Fish and Fishing." On the occasion of its capture three hundred Tench and at least a ton weight of Eels were taken out of the same pond, besides a Jack weighing twenty-seven pounds and a half, which was in the act of digesting two Carp, which weighed two and four pounds respectively. In 1862 the Great Pond was again fished, and on that occasion, although the largest Jack did not exceed eighteen pounds and the largest Carp thirteen pounds, upwards of twenty-two hundredweight of Carp and Tench were taken, and nearly eight hundredweight of Eels.

With the Fishes Mr. Weaver concludes his notice of the *Vertebrata* of the parish, and then follows an excellent chapter on the Land and Freshwater *Mollusca*, succeeded by no less than eight chapters on the Insects which have been found to occur within the limits of the district. These are treated in such a way as to leave no doubt on the mind of the reader that the author is an accomplished entomologist. Did space permit, we should like to give several extracts from these chapters, for we have seldom seen so many interesting facts in connection with the life-history of insects brought together in so clear and entertaining a manner. We must content ourselves, however, with recommending them to the notice of all who would like to learn a good deal of Entomology with very little trouble. The chapters are thus divided:—Chap. V. Beetles; Chap. VI. Earwigs, Cockroaches, Crickets, Grasshoppers and Locusts; Chap. VII. Thrips, Lace-winged Flies and Mayflies; Chap. VIII. Bees, Wasps, Ants and Ichneumons; Chap. IX. Butterflies and Moths; Chap. X. Frog-hoppers, Plant-lice, Scale Insects, Bugs and Fleas; Chap. XI. Two-winged Flies; Chap. XII. Wingless Insects—Mites, Spiders and Cudworms.

The concluding chapters on the Flora of Harting possess no less interest for the botanist than do the preceding ones for the zoologist. We are presented with an account of the forest trees,

flowering plants, orchids, ferns and fungi; and on all these subjects the author has much information to impart. The district is particularly rich in orchids, no less than fifteen species having been collected and identified. The sandy lanes of Sussex are well known for the profusion of ferns, with which, in many places, their high banks are clothed; but we were scarcely prepared to learn that in this "corner parish of West Sussex" no less than seventeen species may be found. Under the head of Fungi, the author notices a specimen of the Giant Puff-ball (*Lycoperdon giganteum*), obtained in the autumn of 1873, which measured thirty-eight inches and a half in horizontal circumference by thirty-one inches in vertical circumference, and weighed six pounds!

It is unfortunate for the reader that there is no index to this book; for a good index would have added considerably to its utility. We presume by some oversight it was forgotten!

We should have liked to learn something about the herd of Red Deer which once roamed in Lady Holt Park, and since Mr. Gordon has referred (p. 131) to an entry in the Caryl Account-book for Lady Holt, "Ap. 22, 1700. Paid Jones ye faulconer a year's wages, ending Lady Day last, £8," it would have been interesting to know something about hawking on the South Downs in the days of Queen Anne. We can add a new quadruped to the fauna of Harting, in the shape of the Bank Vole (*Arvicola riparia*), which Mr. Weaver thinks he has not identified with certainty, but a specimen of which we picked up dead one day in autumn, on the hill outside the park gates. As the Pipistrelle is not included amongst the Bats (p. 233), and we have often seen it on the wing about the lanes of Harting, we presume that, by a *lapsus calami*, the rarer Barbastelle has been inadvertently allowed to take its place. We will not refer to the typographical errors further than to say that, considering the number of scientific names which of necessity appear in a book of this kind, the printers may be congratulated upon the existence of fewer misprints than might have been expected.

Apart from its value as a contribution to county history, the book, on the whole, furnishes one of the best accounts of a local fauna and flora which we have met with for some time, and we commend it to the notice of every zoologist and botanist.

THE ZOOLOGIST.

THIRD SERIES.

VOL. II.]

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[No. 15.]

THE REVIVAL OF FALCONRY.

BY CAPTAIN F. S. DUGMORE, H.M.'S 64TH REGIMENT.

SOME ten or twelve years ago H. H. the Maharajah Dhuleep Singh, in conversation with the writer, expressed the opinion that the revival and successful practice of Falconry in England was an impossibility; and I remember hearing my lamented friend the late Mr. E. C. Newcome, of Feltwell, express himself in almost equally discouraging terms. Probably none were better qualified to pronounce authoritatively on the subject than these accomplished sportsmen—themselves two of the most successful falconers that the nineteenth century has yet produced. So I felt there was nothing for it but to accept the adverse verdict, and to give up—for the moment at any rate—Falconry in England.

But I did *not* finally give up the fond dream of my earliest boyhood—the dream of some day assisting to remove from the musty category of “the things that were” and to restore to a recognized position among the pastimes of our day the noble old sport of chivalrous times, when *battues* of tame poultry and tournaments of doves were unknown, and when all the sports of the field were shared in, and graced by, the ladies, instead of being, as now, with but few exceptions, monopolized by the sterner sex.

I firmly believe that it is, in great measure, to the general participation of our ancestresses in the health-giving sports of the field, that we are indebted for the stalwart frames, the vigorous manhood, and the invincible pluck for which our English country

gentlemen stand unrivalled; the "*mens sana in corpore sano*," which, when occasion arises, carries English gentlemen sturdily and cheerily through such little undertakings as a "Ride to Khiva."

Country-house life has greatly changed since those good old days. It remains to be seen what will be the effect on the coming race of our present fashionable modes of killing, rather than utilizing, time: the sexes separating for the day (to the no small loss of both); the gentlemen to go through the incidentless routine of the "hot corner," with its maximum of slaughter and minimum of exercise, bodily or mental; the ladies to the sofa and the latest French novel, or the barouche and the talking of scandal, the propensity of the fair sex to which is far too inveterate to be checked by aught but the presence of men. No wonder that we hear of new-fangled nervous disorders such as our ancestors never dreamed of, affording a rich harvest to the lucky inventors of "neuraline," "nervine," "zelodyne," and such like fearfully and wonderfully named compounds!

But I am getting out of my depth, and shall be pulled up by the Editor if I break out into an essay on the impending degeneracy of the British variety of the human species, and the possibility of its eventful return—by an inversion of the Darwinian process—to the Simian type; which pleasing result may some day perhaps afford an interesting subject for retrospective enquiry to the New Zealander of the remote future as he lounges on the hoary ruins of London Bridge.

To return to my subject. I gave up Falconry in England; tried France, where there is much more to be done; and then embarked with fifteen hawks and no falconer for the New World.

I had some sport—probably because I had no falconer. But military duties kept me in Canada—not a good hawking country, except for Bitterns, which are everywhere abundant, and of which I have taken four in an hour with a single Goshawk. The bitter cold of the Canadian winter and the almost total absence of visible animal life for six months in the year, are terribly against the falconer, whose happy hunting grounds in America are the western prairies, with their packs of Pinnated Grouse. The course of duty brought me again to England in 1870, since which time I have been engaged in fighting against fate, hoping against hope, attempting an impossibility—the revival of Falconry in England.

Shall I be deemed presumptuous if I say that the period has at last arrived when I feel myself entitled to claim the reversal of the weighty opinions I have quoted, and, for the first time during my career of over twenty years as a practical falconer, to pronounce that the impossibility no longer exists?

Things are wonderfully changed since the time I speak of. Ten years ago there was no Gun License Act. Ten years ago there was no Wild Birds Preservation Act. Naturally enough, the country literally swarmed with hedge-poppers. Now, to a falconer, game-keepers are quite bad enough; still it is possible to come to an amicable understanding with them. I have never failed to do so; and, finding they have nothing to fear from my hawks, many of them become my warm supporters. In twenty years I have done but one piece of mischief—in April, 1876, an unlucky Partridge got accidentally knocked over by a falcon of mine named "Tigress." With hedge-poppers, on the contrary, it was never possible to deal, and the destruction, by a charge of shot, of every trained Peregrine was accordingly a dead certainty, sooner or later. Between the two Acts I have mentioned hedge-popping is, thank goodness, nearly extinct, at any rate during the spring, the best hawking season; though how long such will continue to be the case, if Sir Alexander Gordon gets his way, it is not easy to say. Ornithologists, sportsmen, and gamekeepers alike should have a keen eye, before it is too late, to the Bill for the so-called "Amendment" of the Gun License Act, which Sir Alexander has now before Parliament, and which, by allowing the carrying of an unlicensed gun for the destruction of hares, rabbits, and "vermin," will, if it becomes law, practically destroy the effect of the Gun License Act, or limit its restrictive operation to legitimate sportsmen only.

As all the animals specified can be much more easily and effectively "destroyed" by other means, such as trapping, netting or ferreting, than by shooting, it is clear that the Bill is simply a sop to the smaller tenant farmers and cotters, by providing their sons with a cheap excuse for poaching their landlord's and their neighbour's game, instead of attending to their proper work. Of course the gun will only be carried (and it will be carried habitually), ostensibly for the "destruction of vermin." We *ought* to know what that means by this time!

Legitimate game-preservers and sportsmen will be the great

sufferers by the Bill rather than the excessive preservers, whom we have mainly to thank for the anti-game-law agitation that is becoming chronic; since the latter usually keep too large a staff of keepers to give idle hulking youths the chance of doing much mischief when loafing about with a rusty gun "looking for vermin."

For the present I fear I must count the readers of 'The Zoologist' as some of the remaining enemies from whom I have, as a falconer, most to dread; but only, of course, as regards the destruction of the sources of supply on which a falconer depends. I need scarcely say that I believe a trained hawk, with bells and jesses, is sacred with any ornithologist who has the feelings of a gentleman, *cela va sans dire*; but I fear that few such will follow the rule which is a point of honour with most men who have kept hawks, never to fire at a wild hawk. If they only knew how much more pleasure is derivable from watching the habits of the living bird than is to be gained by contemplating its motionless distorted skin (I know of but one man in England, Mr. Hancock, who can stuff a hawk properly), I should not despair of their conversion.

Here is an instance of what I mean. I notice in the October number of 'The Zoologist' an account of a male Hobby having been shot near Banbury, in Oxfordshire. That Hobby was the father of a nest that had been protected by myself and others for years. The old birds used almost daily to join my Peregrines when flying at the lure, and have often played and circled round me within twenty yards. The result of that unlucky shot was that the nest came to nothing last season, and I fear will not be used again. I only trust that a Hobby's nest I know of in a certain eastern county may continue to escape a similar fate. Fortunately Hobbies, as a rule, fly so exceedingly high, often being only discernible by using a glass and following the upturned eye of a falcon,—an invaluable ally to a true naturalist,—that without a tame hawk to attract them down, it is rarely possible to murder these lovely birds. When in Central Florida, in 1870, I was much interested to notice how similar the flight of the Swallow-tailed Nauclerus, of which I saw scores, is to that of the Hobby, though even more beautiful. Like the Hobby, it appears to feed mainly on dragonflies.

Ornithologists *will* buy Peregrines' skins, notwithstanding the mischief occasioned by the demand for them. Last summer the

old birds of a Peregrine's nest on Loch Gail, which has existed for centuries and produced the finest falcons on record, were shot, and the young ones left to perish miserably by starvation. One of my falconers visited the nest just too late to save them. I believe this mischief was done for "collecting" purposes, though Scotch gamekeepers, as such, are terrible destroyers of the noble bird that is really their best friend and ally. I will not here enter upon the question whether the spread of the grouse-disease is not purely and simply attributable to the ruthless destruction of Nature's surgeon, the Peregrine, by people who think themselves wiser than Nature; but it is a fact that there are Peregrine's eyries on the west coast, the only remains round which (excepting an occasional Rock Pigeon) are those of the gamekeeper's deadliest enemy, the Hooded Crow. Much good might be done if 'The Zoologist' and 'The Field' would decline to chronicle the slaughter of hawks and to pander to the vanity of their destroyers.

The senseless rage for "British-killed specimens" of all British birds is the curse alike of the falconer and of the true naturalist. Why not have our "British" specimens flying about round us, so that we may, as lovers of Nature, watch and study their habits, instead of doing our best to complete the extinction of any species particularly rare or particularly beautiful? Surely continental skins are all we collectors—for I am a collector as well as a falconer—need require; and the fashion once changed, the supply would very soon increase to meet the demand. I know of a small marsh in France where, at the proper season, you may see two hundred Hobbies in sight at once, hawking the large dragonflies, like so many Swallows.

But I am digressing. Ten years ago there were in England, to the best of my knowledge, but three professional falconers. An attempt was made, a little later, to start a Club and School of Falconry, but no professional falconer of credit was then available. The French "Champagne Hawking Club," of which M. Werlé was the head, had to be broken up, in great measure because they could not get on with their falconer, and could not supply his place. At the present time we have in England at least nine professional falconers, of whom four are in my own service, and available to be sent with hawks (of which I have about fifty) to any suitable localities where the sport would be appreciated. It need not be thought that these four were got

together without years of labour and close observation of the natural aptitude of different individuals. One I took from his work as an engineer, another as a gamekeeper, a third as odd man to an Irish squireen, and it took me just three years to trace one of them whose handiness, as a boy (under the Maharajah), I had remarked long ago, but of whom I had lost sight.

There were other difficulties ten years ago in the way of all who cared to take up falconry, but who could only do so on a small scale. Keeping hawks without a falconer was a drag and a tie. If left behind to the mercy of keepers or stable boys, during the temporary absence of their owners, they were almost certain to come to grief; while taking them about on visits did not always answer. I used to do this until I found my friends so unappreciative with regard to hawks, that if I continued this course I should have very few visits to pay! Having no falconer then, I had to choose between my friends and my hawks. I chose the latter,—to my mind, the truest friends a man can have,—but I cannot quite expect other and less enthusiastic falconers to look at things in exactly the same light as I did.

Many would have enjoyed the use of a hawk or two for the hawking season, who did not care to be bothered with them during the long period of moulting and uselessness. Yet the supply was too uncertain to make it safe to get rid of the hawks when they began to moult, as should always be done except in the case of Goshawks or special favourites. It does not pay to moult a Peregrine or Merlin, since their performances after moulting rarely come up to their first season's form.

So long as the Hereditary Grand Falconer of England, the Duke of St. Albans kept hawks (for doing—or *not* doing—which, he receives £1000 a-year from the State) it was, of course, possible to place hawks temporarily, or for the moult, under the care of his falconer, John Pells. Pells was always most obliging, and had plenty of time to attend to the wishes of amateurs, since the Duke's establishment was limited to half-a-dozen hawks, on which, including the falconer's wages, he expended only £200 a-year out of the £1000 he received and, I believe, still receives. But some ten years since the present Duke, in an economical fit, thought he might as well save a little more of the sum allowed him by the State as Grand Falconer; so, heedless of the motto "*noblesse oblige*," he broke up the establishment, and sent poor old Pells

adrift (after forty-five years' service under the St. Albans family) on a beggarly pension of £50 a-year! Why do not some of our Parliamentary Reformers take measures either to induce the Grand Falconer to give *some* value to the nation for the £1000 a-year paid to him, or to reduce the amount?

This questionable action almost proved a death-blow to modern Falconry; for from that time to the formation of "The Falconry Club," which has just been started, at the suggestion, and by the exertions, of the Editor of this Magazine (to whom I gave for that purpose the use of my entire establishment of falconers and hawks), there has been in existence no central depôt to which the amateur could have recourse for instruction, for assistance in procuring hawks, or for the temporary care of them. Thus it was impossible for a beginner to take up Falconry as an occasional pursuit and in moderation. Having to provide all his own resources, he had either to let it alone, or to go into it as a regular business taking up the whole of his time—an undertaking for which few are inclined.

I am not ignoring the fact that Falconry has never ceased to be carried on during the past ten years. The Rev. Gage Earle Freeman ("Peregrine" of 'The Field'), the apostle of modern Falconry, has from time to time rendered invaluable service to the cause, and attracted public attention to it by charming articles and letters on Falconry penned in his own most characteristic and genial style, to say nothing of his separately published and important works on the subject. My late friend Mr. Ewen, of Ewenfield (Ayrshire), used to kill some three hundred grouse every year with falcons. Another friend, Major Hawkins Fisher, of Stroud Castle, has constantly done good work at Partridges and Rooks; and, that select few, the "Old Hawking Club," with their clever falconer, John Frost, have been most successful in flying at Rooks and other quarry on Salisbury Plain. Last spring I believe they killed about one hundred and eighty Rooks; and a Goshawk belonging to them took some hundred and fifty rabbits in the course of two or three months in the summer. But all of these, including the "Old Hawking Club,"—the number of members of which are strictly limited,—have been purely private establishments, of which it has been impossible for an outsider to make any use whatever.

I myself even have been compelled before now to let a season

pass, through the impossibility of getting young hawks "hacked"—*i. e.*, flown at liberty for a month—without which full strength of wing is usually unattainable. I had at last to remove the difficulty by purchasing a small Lodge for this purpose in an open part of the County Limerick; but, so far as I am concerned, I might almost have spared myself the trouble, as I now seldom use any but "passage" *i. e.* wild-caught—hawks.

Ten years ago the supply of hawks fit for Falconry was so scanty and uncertain, that if a would-be falconer on a small scale chanced to lose a hawk, he had little prospect of being able to replace it during the same season; and, if he kept reserve hawks for fear of accidents, they required so much exercise as to add seriously to his work. This difficulty, scanty supply, was especially the case with regard to Goshawks; and this was particularly unfortunate, since the Goshawk is, *par excellence*, the country gentleman's hawk. The Peregrine is easily lost, and can only be used in a suitable unenclosed country, of which we have but little left, though in some districts, especially Oxfordshire, high farming is again unenclosing the country, and obliterating the hedgerows. The Goshawk can be used anywhere, even in the thickest woods, and cannot be lost without extreme mismanagement. Moreover, *one* bird (of this species) will do all the work required; fourteen or fifteen rabbits or seven or eight Pheasants, in a day, is a performance quite within the powers of this noble bird. Hares try it more severely; in fact, it is not every Goshawk that will hold a hare at all. True, the exquisite beauty of the Peregrine's flight is wanting. The flight is a comparatively straight one, though I have had Goshawks that would stoop almost like falcons; but to make up for this there is an amount of intelligence and affectionate attachment that we look for in vain in the Peregrine. It is most interesting to notice the sharp, excited, knowing way in which a Goshawk will watch every movement of its assistant spaniels in rabbit-hawking. The bird, properly treated, is as companionable as any dog; in fact, in moral qualities, it is simply a winged terrier, and if properly trained will follow its master for miles through the thickest woods. Unlike most other species, its affection is not cupboard-love; for I have known a Goshawk, after catching a rabbit, to fly to my empty fist, *bringing the rabbit with her*, and the same hawk would equally come to my fist when called after being completely gorged!

Ten years ago it was almost impossible to get a Goshawk in England at any price. Two or three were caught annually by the Dutch falconers; but with these exceptions there was nothing to be got, unless an occasional wretched-looking scarecrow, imported in a cage by the Leadenhall dealers, with every feather broken. And yet the hawk is not uncommon on the Continent; but they have to be specially sent for, or they arrive spoilt and good for nothing.

Believing the Goshawk to be the hawk of the future for England, I have devoted no little trouble to solving the problem of a supply; and I *have* solved it. In some of the large forests in France the nests are so abundant that I have seen seven (yielding twenty-two nestlings in one season) in a square mile. Moreover, I have long had an idea that even better supplies are to be obtained from the North. Accordingly, in 1876, Lord Lilford and myself sent to Norway in the autumn to explore the haunts of the raptorial birds, in which exploration we met with complete success. In about ten days the three men (one of my falconers and two Norwegians) caught twenty-seven "passage" (*i.e.*, wild-caught) hawks—fourteen Goshawks, eleven Norwegian Gerfalcons, and two Rough-legged Buzzards. These Goshawks were nearly as large again as the French birds, besides being certainly faster, though preying almost exclusively on Ptarmigan. Ornithologists may be interested to learn that the only other hawks met with in Norway by my people were the Merlin and the Hobby (in October!). Another unfailing source of supply is Latakia, in Syria.

These wild-caught Goshawks are infinitely better and easier to manage than nestlings, which require constant attention, and go out of training so quickly as to try the temper of a beginner most terribly. It is nestlings that have earned for the Goshawk a character for sulkiness and laziness which has deterred many falconers from making use of it. A "passage" Goshawk, as a rule, is devoid of these bad qualities.

Merlins are getting gradually scarcer. They are absolutely harmless; yet the gamekeepers wage deadly war against them, and, nesting as they do on the ground, they are only too easily killed. Thirteen nests were thus cruelly and wantonly destroyed last summer in a small island off the west coast of Scotland. I do what little I can by purchasing all the young ones the keepers send me, whether I want them or not, as this encourages them to

preserve the old birds ; but the supply is getting less and less every year. It is a pity, for the Merlin is "the lady's hawk," being singularly gentle, and perfectly easy to train. In fact, it trains itself; the mistake beginners make is in thinking a Merlin requires training at all. I remember when I was a beginner I was told by an experienced falconer (Mr. Charles Holford), "My dear fellow, it is *you* that want training, not the hawk." And he was right. The great drawback with Merlins is that they are practically useless after October, when the Lark-hawking ends, and should then be given their liberty. I fear these little hawks too often fall victims to misplaced confidence. They often, when in a wild state, play round the falconer like Hobbies; and the Merlin seems to have such an instinctive love of sport, and such a trusting confidence—such a feeling of good-fellowship—towards the sportsman, that it will accompany him for hours when beating a Snipe-bog. For myself, I should be sorry to make a friend of the person who not long since wrote to 'The Field' to boast of having wantonly slaughtered one of a pair of Merlins that were thus following him on Dartmoor. When Merlins follow the gunner in this fashion it may often be with an eye to the chance of his putting up a Lark, their natural quarry, for them. But this is not always the case, I think, since wild Merlins have often followed me, and settled on the ground close to me when I have been exercising Goshawks on unlikely ground for Larks.

For Sparrowhawks I dare not say much. No hawk will do so much or such good work when properly trained. It is extremely plucky—one of mine pulled down a Rook after a long flight; but it is, without exception, the hardest hawk to manage that a beginner could select, especially if a nestling; and in a game country, as a wild bird, it is certainly most mischievous. If a Sparrowhawk once discerns a coop with a lot of tame-bred young Pheasants, not one of them will escape while the hawk has its life and liberty, though I do not think it is nearly so mischievous to young game naturally reared, constantly shifting quarters, and clever at concealment. Even in my own case, lover of hawks though I am, I must confess that a Sparrowhawk passing within range of me when covert-shooting on a friend's property gives rise to a sharp internal conflict between my duty to my friend and my duty to Falconry. Fortunately for my peace of mind, the hawk usually takes advantage of the few seconds' grace thereby arising, to make himself scarce,

and thus saves me the pain of having to reconcile conflicting duties. Otherwise I fancy I should fire, to save appearances, and as a compromise—but probably wide, to save my feelings!

Harriers and Buzzards, especially the former, are the hawks for whose misdeeds the noble and comparatively harmless Peregrine too often suffers. With poetic justice, Peregrines can be trained to take them, and a very fine flight it is. Normandy is the country for this sport, which one of my falconers has also carried out successfully at Chalons. Good riders are needed, as the Peregrine gets sadly mauled in the struggle on the ground unless aid is forthcoming.

A Kestrel, too, affords a very pretty flight; but I scarcely like to fly a tiercel at it in the open country where the flight will end in a kill, as it seems a shame to destroy this little hawk—the farmer's best friend. I once took thirty-nine caterpillars out of the crop of a Kestrel, though the mischievous field mice constitute its more usual food.

I think I have said enough to prove that, after twenty years' labour in the cause, I am at last justified in pronouncing the Revival of Falconry in England to be no longer hopeless. It is, I firmly believe, now *possible*: whether it is *probable* must depend mainly on others.

Personally, I can do little more. Military duties leave me neither opportunity nor leisure to enjoy the sport as I used to do in the happy days of old when, unassisted, I trained and worked all my own hawks. But others are welcome to the result of experience and heavy outlay. I can assure them that my experience, quite apart from my present hawking establishment (which is no trifle!) has been very dearly bought, though I trust not bought in vain.

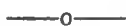
A very few words will suffice to sum up briefly the advantages we now possess over those we had ten years ago.

We are comparatively free from the scourge of hedge-poppers. Long may we remain so!

We are no longer at the mercy of one professional falconer, and dependent on his good or bad conduct.

We are no longer dependent for supplies on bird-dealers (an untrustworthy fraternity, as a rule), who import the hawks in such bad order as to be practically useless.

And lastly, private enterprise having at length filled up the gap caused by the Duke of St. Albans' parsimony and neglect to provide what he is paid by the State for providing—public hawks—we have now a Central Dépôt and School of Falconry, with an ample staff, at the service of all who wish to try their hands at the noble art, however little time they may have to devote to its practice. This result has not been attained without very heavy sacrifices; in return, may I bespeak one kind thought for the promoters of the Revival of Falconry from every reader of 'The Zoologist' whenever he may see temptation, in the shape of a hawk of any kind used in Falconry, within range of his deadly breech-loader!



THE LAND AND FRESHWATER MOLLUSCA OF SUSSEX.

BY THE EDITOR.

THE Lists of Land and Freshwater Mollusca which have from time to time been prepared by conchologists in Sussex have reference, for the most part, to restricted areas in the county, or to the particular localities in which the authors of these lists reside. So far as we are aware, no general catalogue for Sussex has been published; and in the following pages, therefore, an attempt will be made to supply a want which may possibly have been experienced by conchologists, not only in Sussex, but in other parts of the country. At the same time it is hoped that a catalogue, such as the present, may be the means of suggesting to many readers of 'The Zoologist,' and to their friends, a new field for research, or at all events of directing their attention more particularly to a branch of Natural History which upon investigation will be found to possess much attraction, and which, at present, scarcely receives that attention which it deserves.

In the preparation of this catalogue the Editor has been assisted by several friends in Sussex, to whom he desires to express his obligations, and has availed himself of the information contained in all the local lists for Sussex which he has been able to procure. The principal sources of information may be briefly stated to be the following:—

1. A MS. List of the Land and Freshwater Mollusks of Sussex, by William Borrer, Esq., of Cowfold, Horsham, from

observations made chiefly in the western division of the county.

2. Mr. Weaver's account of the Mollusca to be found in the parish of Harting, near Petersfield, contained in Mr. Gordon's recently published work, 'The History of Harting,' pp. 307—323.
3. "A Season's Collecting of Land and Freshwater Shells in West Sussex," by William Jeffery. Published in 'The Zoologist' for 1868, pp. 1215—1217.
4. "A List of Land and Freshwater Mollusca which have been met with in the Neighbourhood of Brighton," published in Merrifield's 'Sketch of the Natural History of Brighton' (1864, p. 223).
5. "A List, with Notes on the Habitats and Localities, of the Land and Freshwater Mollusks observed in the Vicinity of Lewes, in Sussex," by W. C. Unwin, Esq. Published in 'The Naturalist' for 1853, vol. iii., pp. 54—58.
6. A List of the Mollusca which have been found in the neighbourhood of Eastbourne; prepared, with other provisional lists of the Fauna and Flora of the District, by a Committee of the Natural History Society of Eastbourne, and published in Gowland's 'Guide to Eastbourne,' 8th edition.
7. The Editor's own notes of species collected, or identified, in excursions made in different parts of the county during the last fifteen years.*

The letters B, W, J, M, U, G, and H, which will be found appended to observations throughout the catalogue are the initial letters of the writers' names above mentioned, and indicate the authority for the various statements to which they are appended. The systematic arrangement is that adopted in the first volume of Mr. Gwyn Jeffreys' 'British Conchology.'

I. TERRESTRIAL MOLLUSCA.

UNIVALVES (*GASTEROPODA*).

Fam. LIMACIDÆ

Arion ater. The Black Slug.—Found in the neighbourhood of Horsham, Cowfold, and West Grinstead, where black, white and

* Some of these have already appeared in 'Rambles in Search of Shells,' published by Mr. Van Voorst in 1875.

red specimens have been met with, though rarely.—B. Harting, near Petersfield.—W. Brighton.—M. Common in the vicinity of Lewes.—U. “By many persons of easy belief,” says Mr. Weaver,* “this slug is thought to be endowed with a valuable property, in which may be found a slight compensation for its depredations. In the destruction of warts on the human skin, it has the credit locally of having been eminently successful long before the application of acetic acid to this purpose. The living slug, after having been carefully rubbed over the parts affected, is to be securely impaled on a thorn in some secluded place, and there left to die. If, from the commencement of the experiment, the warts do not gradually become fine by degrees and beautifully less, until they finally disappear, the operator has failed in one or other of the two conditions indispensable to success—implicit faith or strict secrecy!”

Arion hortensis. The Garden Slug.—Common everywhere. The eggs are phosphorescent for about a fortnight after they have been deposited, and may be seen in the evening on moist hedgebanks, giving out a pale light.

Limax marginatus. Sowerby's Slug.—Common in the Weald, and found also on the South Downs. Not uncommon about Henfield, and at Hassock's Gate, near Hurstpierpoint.—B. It may be looked for under stones, among dead leaves, and at the foot of old walls. It is of inactive habits, and secretes a thick slime. The Abbé Stabile has observed that it is much preyed upon by large carnivorous beetles, and Mr. Gwyn Jeffreys adds† that in its turn it preys upon live worms and smaller slugs.

Limax flavus. The Yellow Slug.—Found occasionally at Chichester, Cowfold and Henfield (B); at Harting (W and H); at Brighton (M); and near Hailsham (H). Specimens have also been met with by the side of a ditch near the Priory, Lewes.—U. To be looked for in damp places, as cellars and drains, and under stones in moist situations and about decaying stumps in the woods.

Limax agrestis. The Field Slug.—Abundant everywhere; the pest of the farmer as well as of the gardener. It may be met with in the cornfields in such abundance that even the willing Rooks and Pheasants find it no easy task to keep its numbers within safe

* ‘History of Harting,’ p. 312.

† ‘British Conchology,’ vol. i., p. 132.

limits. It is a favourite morsel with the Hedgehog, and furnishes food also to the Blindworm (*Anguis fragilis*).

Limax maximus. The Great Slug.—Generally distributed, frequenting outhouses and cellars in damp situations. It has been known to enter larders and feed on raw meat.* In woods also it is not uncommon, and is fond of creeping on the trunks of trees on wet nights, and on sugar, when placed there to attract *Lepidoptera*.—B.

It is somewhat curious that none of the Sussex conchologists have included in their lists the Shell Slug, *Testacella haliotide*a, which is apparently not found on the chalk soil or sand, although it is not very uncommon on the London clay.

Fam HELICIDÆ.

Succinea putris. The Amber Snail—so called from the colour of the shell—is to a great extent amphibious. It is not uncommon in ditches overgrown with herbage, and appears especially partial to the stems of *Ænanthe crocata*.—B.

Succinea elegans. The Slender Amber Snail.—In similar situations, but rarer. Taken at Henfield, and dead specimens found amongst the *rejectamenta* of the floods in the level between Henfield and Steyning.—B. Included, under the name *Succinea Pfeifferi*, in a list of Mollusca found in the neighbourhood of Brighton (M), but not at Eastbourne (G). By some conchologists the two species have been considered to be mere varieties of the same species, great variability of form being observable in all the species of the genus *Succinea*; but *elegans* differs from *putris* in the darker colour of its body, and the more slender shape of the shell, as well as in its longer and more pointed spire. In 'The Zoologist' for 1862 (pp. 8138 and 8171), Capt. Bruce Hutton has recorded some interesting observations on *S. elegans*, which lead him to consider it a distinct species. He found it in some abundance on leaves of the yellow iris.

Vitrina pellucida. The Transparent Glass Shell.—Abundant on the clay on and under dead sticks and leaves in hedge-bottoms and woods. Less common on the sand. It appears very indifferent to cold, often crawling about in the severest frost.—B. Specimens have been obtained at Ratham, near Chichester (J),

* See 'The Zoologist,' 1861, p. 7819.

amongst moss in Ashcombe plantation and elsewhere near Lewes (U), and in the vicinity of Brighton (M).

Zonites cellarius. The Cellar Snail.—Not uncommon in cellars, drains and sculleries, and under tiles or loose bricks about houses. The shell is thin and brittle, but very glossy and semitransparent, and of a yellowish or brownish horn-colour. It is not confined to the neighbourhood of houses, but is found also in woods and hedge-bottoms.

Zonites alliarius. The Garlic Snail.—In similar situations to the last named, but less common. It has a darker and more solid shell, and has a strong smell of garlic, especially when irritated. This peculiar smell, however, varies in intensity, and is sometimes hardly perceptible even when the animal has been much provoked. Two specimens, procured in the vicinity of Lewes, were determined only by comparison, there being no smell of garlic present.—U. It is stated to be rare in the neighbourhood of Brighton (M), and has not been met with at Eastbourne (G).

Zonites nitidulus. The Shining Snail.—Common in similar situations with the two last named.—B. Specimens have been collected at Ratham, Chichester (J), Brighton (M), in a shaw near Kingston, and in Ashcombe plantation, Lewes (U), and in the neighbourhood of Eastbourne (G). The shell differs from that of *Z. cellarius* in being smaller, and in having one whorl less, the spire more raised, and a much larger and deeper umbilicus. Its surface is also much less glossy.

Zonites purus. The Clear-shelled Snail.—Sparingly distributed under stones and amongst the roots of grass and moss.—B. In the neighbourhood of Lewes it is considered rare, but specimens have been collected on a bank in Ashcombe plantation.—U.

Zonites radiatulus.—The Little-rayed Snail.—Met with under stones and dead wood, and amongst leaves in woods, but not common.—B. Found with *Z. nitidulus* near Kingston and in Ashcombe plantation, Lewes.—U.

Zonites nitidus. The Glossy Snail.—Specimens have been procured in the neighbourhoods of Chichester (J) and Brighton (M). In the vicinity of Lewes it is occasionally found by the ditches in the Levels.—U.

Zonites excavatus.—A single specimen under dead fir bark in St. Leonard's Forest.—B.

Zonites crystallinus. The Crystalline Snail.—Under stones

and dead wood and amongst the roots of grass in open places. "Not abundant, but found both in the Weald and on the South Downs."—B. This minute species, inhabiting a transparent shell with a high polish, together with the Top-shaped or Fulvous Snail, to be next mentioned, is found under stones and moist decaying leaves in the upland and lowland covers, hedgerows, gardens and pastures in the neighbourhood of Harting.—W. On the Downs at Lewes it is said to be not uncommon, in company with *Helix pulchella*, amongst earth at the roots of grass.—U. It has been met with also at Brighton (M), and in the vicinity of Eastbourne (G).

Zonites fulvus. The Tawny Snail.—Found in similar situations to the last named.

Helix aculeata. The Prickly Snail.—The distinguishing character of this little shell, which measures about the tenth of an inch in breadth, is that the epidermis with which it is clothed rises at frequent and regular intervals in the middle of each whorl into sharp teeth or points, so as to present under a lens the appearance of a very elegant spiral of bristles. It is met with not uncommonly under fragments of chalk and among decaying leaves under beech trees.—W. Mr. Gwyn Jeffreys has observed that it walks with its shell erect, carrying it in the most graceful manner, and often ascends trees, particularly the alder. In the autumn it is said to use the falling leaf as a locomotive to reach the ground.

Helix pomatia. The Edible Snail.—In a copse upon the Downs in West Sussex, not far from Petersfield, one or two dead shells have been found, from which it may be assumed that this species formerly existed in that neighbourhood, but no living examples have been met with in recent times. A friend in that neighbourhood, however, turned out fifty or sixty live specimens, but the experiment to establish them in the new locality failed.—H. Mr. W. Jeffery, of Ratham, near Chichester, writing to the Editor in January, 1874, says:—"Many times have I searched for *Helix pomatia* on our Downs, but always without success. Some five or six years ago I had between thirty and forty sent me from the Surrey Downs, a part of which I turned down in my garden, and the remainder on a bank of light soil near. Of those on the bank I saw no more, but those in the garden seemed to do pretty well for a time, and at least one brood of young were hatched, some of

which attained the full size. Now, however, the old stock is no more, and last summer I only saw two of those bred in the garden. These are of a much darker colour than the imported specimens, and in their earlier stages of growth led me to think they were hybrid with *H. aspersa*. In the garden *H. pomatia* is not nearly so destructive as *H. aspersa*, preferring, as a rule, decaying vegetation; a yellow half-rotten and thin glutinous turnip-leaf is a particularly favourite morsel with them." With regard to the name "Apple Snail," which is sometimes applied to this species, it may be appropriate as regards its shape, or with reference to the animal's *penchant* for apples; but the word "*pomatia*" is derived from "*πομα*," an operculum, and not from "*pomum*," an apple.

Helix aspersa. The Common Garden Snail.—Generally dispersed, but much less common on the clay than on the sand and chalk. Near the sea a pale variety is very common, and specimens of a pale yellowish green have been met with inland at Cowfold.—B. A curious circumstance is related in Merrifield's 'Sketch of the Natural History of Brighton' (p. 157), which proves that rats are as fond of snails as some of the human race, and are quite as ingenious in capturing them. The facts were thus narrated to the author by Mr. W. W. Attree, of the Queen's Park:—"While my father was building this house (the villa in Queen's Park), the gardens, laid out beforehand, were colonized on a sudden by crowds of rats. That they should travel half a mile from the town was not strange, but there was no inhabitant near the unfinished walls, and apparently nothing more to tempt their visit than when the spot was a bare hillside. The workmen said that the rats came for the new plastering; but that, if possibly a *bonne bouche* in a rat's diet, could not, it seemed to me, support them. Besides they could scarcely have eaten it without their depredations being discovered by the workmen, and this did not take place. While still wondering about the matter, I one day watched a rat come out of his hole at the foot of a mound in the back garden, go some paces without perceiving me, climb the stalk of a hollyhock, clear off several snails, bring them down in one paw like an armfull, and run with them on three legs into his hole. On examining this hole, and others as well, I found the inside strewed for some distance with broken snail-shells. At that time there was about the place a great variety of snails with delicately coloured shells of different sorts.

I fancy they have been cleared off by the pea-fowls who regularly hunt the ground, the pea-hen quartering the ground like a pointer. We have hardly any except the common brown snail now left. I looked among the *débris* round the rats' hole, to see if they had chosen any particular kind of dainty snail, as the Romans did, and some moderns have done, but the broken shells were almost all those of the common brown snail, with only a coloured one here and there amongst them."

Helix nemoralis (The Wood Snail), with a dark lip, and *Helix hortensis*, with a white lip.—Generally dispersed and abundant everywhere. It has long been a question with conchologists whether these two forms are distinct species. Linnæus united them. Müller separated them. In modern times, Forbes and Hanley agree with the former, Gray with the latter. Mr. Gwyn Jeffreys says the variety *hybrida* seems to connect the two, and he regards *nemoralis* as the type, and *hortensis* and *hybrida* as local or casual varieties of one and the same species. In the neighbourhood of Chichester *nemoralis* is found on the Downs amongst juniper-bushes and furze; *hortensis* is most common in the hedgerows in the lowlands. The two forms are not found living together.—J. and H.

Helix arbustorum. The Shrub Snail.—Local. On bushy banks about Henfield and other localities on the sand. Not met with on the clay.—B. Found plentifully among nettles by the roadside and near water in the village of South Harting, and elsewhere in the valley, but not met with on the hills, although in other localities it is said to occur at a great elevation.—W. By the side of the "Cut" near Landport it is not uncommon (U), and is included amongst the species found in the neighbourhood of Brighton (M). It is omitted, however from the Eastbourne list.—G.

Helix cantiana. The Kentish Snail.—Abundant on the chalk and clay; less so on the sand.—B. Not uncommon on the wild plants growing in hedgerows about Harting (W), and on the hill as well as in the valley (H). One of the commonest shells about Ratham; every hedge abounds with it.—J. It occurs at Eastbourne and Brighton, where it is common (M), and in the neighbourhood of Lewes is found on nettles at the foot of the Downs (U).

Helix Carthusiana. The Carthusian Snail, so called from its having been first discovered near a Carthusian Monastery.—A

local species. Found amongst stunted grass on Mount Cabourne, near Lewes, and on Ranscombe Brow.—U. Also between East Blatchington and Seaford. A colony existed for some years at Cowfold, probably introduced with chalk, as it is now extinct. With this exception, not seen off the chalk.—B. Mr. Gwyn Jeffreys gives the habitat as “on grass and herbage in the hollows of the Downs on the Kentish and Sussex coasts.”

Helix rufescens. The Rufescent Snail.—Very abundant on the chalk and sand; less so on the clay.—B. In the vicinity of Lewes observed to be plentiful in nettles, and after the summer rains on the various species of *Rubi*.—U. About Chichester it is common in gardens and hedgerows (J), and is equally plentiful around Eastbourne and Brighton (G and M).

Helix concinna. The Neat Snail.—On nettles in an old chalk quarry at Offham, near Lewes. Also at Bignor.—U. Mr. Borrer regards this as a variety of the next species.

Helix hispida. The Bristly Snail.—Generally distributed, and common under chalk-stones.

Helix sericea. The Silky Snail.—Specimens of a *Helix*, believed to be of this species, found occasionally at Cowfold and Henfield, under stones and pieces of board.

Helix fusca. The Dusky Snail.—Noticed as rare in the vicinity of Brighton.—M. Two specimeas found in Warrinson Wood, near Lewes.—U. Mr. Gwyn Jeffreys gives the habitat as “Woods, on young trees, and among nettles and dog-mercury.”

Helix virgata. The Zoned Snail.—Abundant on the chalk on the whole line of the South Downs, and noticed also in several places on the railway banks, whither it was probably brought with chalk. A black variety with reddish brown bands has been met with, and another transparent milk-white with cream-coloured bands.—B. The species is common along the coast by Newhaven and Seaford, clustering thickly on the stems of marine plants. The markings vary considerably in individuals, and the sea-side specimens are much finer than those found inland.—U. On thistles, nettles and herbage on the sheep-walks on East and West Harting Downs, Hemner and Torbury.—W and H. A variety met with on the Downs near Chichester, and in Kingly Vale has “a dull creamy-coloured shell, with the purple lip distinct.”—J.

Helix caperata. The Wrinkled Snail.—Differs from *virgata* in its much smaller size, depressed spire, and larger umbilicus, and

especially in the numerous rib-like striæ which hoop round each whorl. Very common on the Downs in autumn, and said to yield "a very fattening nourishment" to the sheep, which pick them up with the short grass to which they cling.—H. This snail is very partial to clover-fields, and is a favourite morsel with the Land-rail.—B. It is most active, and therefore more generally noticed after rain.—H.

Helix ericetorum. The Heath Snail.—Abundant on the chalk, to which, in Sussex, it appears to be confined. The flat shape of the shell, its large umbilicus, and nearly circular mouth readily serve to distinguish it from any other of the banded snails. The village children in Sussex collect them by bushels, and threading them on strings, make necklaces and bracelets of them. Mr. W. Jeffery has remarked that *ericetorum* attains a larger size in the valleys on the north side of the Downs, where the herbage is less scanty than on the south side, and the sun has less power.

Helix rotundata. The Rounded Snail.—Common under chalk-stones, dead wood, and bark of old trees, as well as in moss and among dead leaves.

Helix rupestris. The Little Wall Snail.—Found on rocks, walls, and ruins, as well as under stones on hill-sides. Rare in Sussex. Specimens found on the north side of the churches at Horsham and Keymer, and on an old wall at Lewes.—B.

Helix pygmæa. The Pigmy Snail.—Abundant under stones on the South Downs, and sparingly under dead wood and leaves in the neighbourhood of Cowfold.—B. Not very common near Lewes, but found with other minute land-shells at the roots of grass and moss, principally *Hypnum purum* and *lutescens*.

Helix pulchella. The White Snail.—Not uncommon under fragments of chalk in Uppark and on East Harting Down.—W. and H. Plentiful on the Downs by Lewes, at the roots of grass and moss, and on the east bank of Ashcombe plantation.—U. On old walls, amongst old mortar and heaps of stones, about Horsham, Cowfold and West Grinstead.—B. Found also in the neighbourhood of Brighton (M) and at Eastbourne (G).

Helix lapicida. The Rock Snail.—About the size of *ericetorum*, but much more solid, lens-shaped, of a dark brown colour, and with a sharp edge or keel round it, which distinguishes it at once from all others of its kind. The crevices of rocks and old walls are

favourite situations for this snail; but as it is rather inactive by day, the best time to look for it is at twilight, or after a shower of rain. The inappropriate name *lapicida* was bestowed upon it by Linnæus, under the mistaken impression that it bored or excavated calcareous rock, as the *Teredo* does wood. This is one of the very few instances in which a species has been inaptly named by that most remarkable and observant of naturalists. It is a local species in Sussex. Specimens have been met with on old walls and under leaves at Cowfold, Henfield and Lindfield.—B. In the neighbourhood of Ratham, near Chichester, not uncommon on the trunks of beech trees.—J. At Uppark it is often found in wet weather ascending the smooth trunks of the young beech trees.—W. At Kingly Vale also numerous specimens were found on ivy-covered trees, and clinging to the under side of the ivy leaves.—H. It is not included in the lists from Brighton and Eastbourne.

Helix obvoluta. The Cheese Snail.—So called from its shape, which resembles a little flat cheese. It is of a reddish brown colour, thickly studded with short hairs. The mouth, which is rose-coloured, and thus quite different to that of every other British species of *Helix*, is closed during the period of hybernation with a thick calcareous epiphragm. The species is a very local one, and, except in a few favoured localities, must be regarded as rare in Sussex. As an inhabitant of Ditcham Wood, near Buriton, it was discovered by Dr. Lindsay, at one time a resident in the neighbourhood. It has since been found at Ashford Wood and Stonor Hill (Rev. W. H. Hawker); Crabbe Wood, near Winchester (W. A. Forbes); Uppark (Weaver); Kingly Vale, near Chichester (W. Jeffery); Duncton (Godlee); Elsted (Miss Buckland); and in a "hanger" on the north side of the South Downs at Springhead, near Storrington (Borrer). It is generally found amongst moss at the roots of hazel, and, after rain, on beech trees at some height from the ground. It is not included in the lists of Mollusca of East Sussex.

A CATALOGUE OF WORKS AND ARTICLES RELATING TO THE ORNITHOLOGY OF FRANCE.

BY HOWARD SAUNDERS, F.L.S., F.Z.S.

DURING a recent residence of some months in France I endeavoured to compile a list of the various treatises upon the provincial and local Ornithology of the country; and the present is a Catalogue of all the published works on the subject of whose existence I am aware. It should be borne in mind that it embraces only works relating to France (including Alsace and Lorraine), and makes no pretension to being a catalogue of French ornithological literature. For a knowledge of many of the minor treatises I am indebted to my friend M. Clement, of Nîmes, and I think that some of my readers will be surprised at the number of works which have been published in France on the subject of Ornithology.

The question of arrangement presented considerable difficulty, for few Englishmen know where many of the smaller Departments are situated; but as the great point is to be able to refer to the authorities upon the *district* respecting which information is required, I have taken the old *Provinces* as a *basis*, and commencing with the Département du Nord, in the Province of Flandre, working round by the coast, west and south, as far as the Pyrenees; thence eastward and north, bringing in the central and composite Departments in the way which seemed most practicable.

To facilitate reference, the names of the Departments, and occasionally those of the places of publication, where the latter are better known to the English reader, are printed in *italics*.

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OCCASIONAL NOTES.

LONGEVITY IN THE DOG.—A Pomeranian Fox Dog, or “Loup-loup,” died last December, within a quarter of a mile of my house, at the age of nineteen years and a month. The father of this dog lived fourteen years, and the daughter fourteen and a half years. I only mention the two latter on the assumption that longevity in dogs may run in families. I am anxious to elicit from your readers whether the age of the longest lived of the three is very exceptional, and also whether I am right in my “family” supposition. The dogs above mentioned were the property of Miss Young, of this place, and the ages can be authenticated.—WILLIAM H. HEATON, (Meadow Croft, Reigate).

DIFFERENCE IN MODE OF FEEDING IN THE RABBIT AND THE HARE.—I was recently told by a Suffolk farmer, who has always been a good sportsman, and more or less an observer of facts connected with natural history, that you may generally tell whether your turnips are nibbled by hares or rabbits by the difference in their mode of attacking the roots. A hare will bite off the peel, and leave it on the ground; a rabbit will eat “peel and all.” I do not know whether this can be corroborated; if so, it is an interesting and might prove a useful fact.—H. MILLER (Ipswich).

THE MIGRATION OF BIRDS IN AUTUMN.—It may not be generally known that immense flocks of Larks arrive in this country during the autumn from the north of Europe. I have fallen in with them daily about the middle of October, when steaming in the North Sea, many miles from land, flying direct for the Norfolk and Suffolk coast. They usually keep company in compact bodies of several hundreds, but now and then a few, fatigued by the journey, would follow for a short distance, and then settle on board, where they would creep into the first quiet corner, and, puffing themselves out like little balls, would soon be at rest. Larks are by far the most numerous of all the birds taken on board the light ships off the eastern coast, immense clouds being reported to have been often noticed hovering round the lamps during a drizzling rain. After these come the Starlings,* and then the Stormy Petrels. The latter, however, do not strike the lights, but settle on the vessels by day during protracted rough weather; they are then generally so thoroughly worn out that,

* The first thousand wings that I received during the autumn of 1872 were made up as follows:—Larks, 520; Starlings, 348; Stormy Petrel, 45; Brown Linnet, 15; Greenfinch, 21; Brambling, 6; Fieldfare, 2; Fork-tailed Petrel, 1; Knot, 2; Blackbird, 20; Redwing, 13; Chaffinch, 15; Tree Sparrow, 3; Rook, 2; Snipe, 1; Kittiwake, 1. A few of the Warblers were taken the following spring, also one Swallow, but no Martins. I also received the wing of one Razorbill.

if thrown up in the air, they will immediately return on board. Gulls occasionally come in contact with the lamps, but it is by no means common for any species, except the Skua Gull, to be taken in that manner. I was informed by the mate of the 'Newarp' that he had once found as many as three Skuas on deck during his watch, one of which, a large brown-coloured bird (probably the Great Skua) that he mistook in the dark for a fowl, as it was lying disabled in a corner, inflicted a most severe bite on his hand. From all I could learn, the species usually taken were either immature Pomarine or Arctic Skuas. Hawks and Owls are sometimes captured on board, but they are mostly observed before dawn, perched on some part of the rigging near the lamps. On one occasion the glass of the lights of the 'Newarp' was found broken, and a duck of some kind, that the crew were unacquainted with, was discovered inside the lantern. Grey Geese, Mallard, and various sorts of wild fowl, used now and then to be obtained, but from all I could hear the numbers of these birds have diminished greatly of late years. Snipe were stated to be among the commonest captures, but during the whole of the winter I only received a single specimen of this species. Woodcocks are supposed by the light-keepers to be particularly swift-flying birds, as they are generally picked up on deck, much cut and injured by striking against the lamps or rigging. The real cause of such mishaps must, I should imagine, be attributed to the weighty condition of the bird at the time of the accident. I found that the Knot was well known as being of frequent occurrence. They were described as flying in large bodies, and numbers falling at once on deck. One of the men declared that the last flocks of these waders that he had observed had suddenly shied when close to the lantern, and that but one or two had been taken. It is stated that many years ago over one thousand birds were one morning collected on board the 'Newarp.' Whether this was really the case or not, I do not pretend to say, but all my information agreed in the fact that there was every year a great falling off in the number of birds so taken. I afterwards learned from an old man, who declared he was on board at the time, that the above statement was perfectly true. He also added that six hundred of the birds, which were principally Larks, were put into one gigantic pie. I have a slight recollection of seeing an account of this fact in some paper, which published the history of the light-ships of the eastern coast. A fall of snow, and a cold wind from the north-west, is certain to bring enormous flights of Larks and other birds along the south-coast; all appear intent on making their way from east to west, occasionally passing in continued streams from daylight till dark. The Larks are usually the first birds to show, a slight covering of snow being sufficient to move them, while it requires a few days' continuance of severe weather before Fieldfares, Redwings, and Blackbirds appear in any numbers. At such times the whole of the bird-catching fraternity of Brighton are engaged in the work

of destruction. Should a strong cold wind from the north-west be blowing, the course of the birds is close to the ground, and thousands are captured in the nets. There is considerable competition for what are considered the best pitches, numbers of men leaving Brighton shortly after midnight, and depositing their packs on the ground they intend to occupy, to reserve the spot; they seek what shelter they can till daylight behind some bank or stack. From thirty to fifty dozen are commonly captured, and the takes not unfrequently reach as high as eighty dozen. I have myself seen over two hundred clap-nets at work on a favourable day; and, as scores of drag-nets are out as soon as dusk sets in, some idea of the number of birds caught may be formed.—E. T. BOOTH (Dyke Road, Brighton).

MIGRATION OF BIRDS IN THE WINTER OF 1877-78.—The immigration of birds on our north-east coast has, during the present season, in some respects been most peculiar, extending, as it has done, over a most unusual period. As a general rule, we expect the most laggard of our immigrants to have arrived by the middle of November. Any coming after this date are such as are driven southward by stress of weather from the more northern districts of our island, and as a rule do not come from the north of Europe. The exceptionally mild winter in Scandinavia has induced many to tarry long past their usual period for migration,—instance the Blackbirds and Fieldfares, which have come in pretty regularly at intervals up to the present date. Woodcocks have also been most erratic in their movements. Mr. Gätke, writing from Heligoland, Jan. 27th, says, "For some weeks we have had almost every day some Woodcocks, as also Blackbirds; the latter, however, are no exception, but the former very much so at this time." A very mild season over all the north of Europe, with occasional short bursts of severe weather, lasting only a few days, has sent the birds southward in great rushes, with long intervals of comparative cessation in the stream of migrants. From the 23rd to the 27th of January we had some rather sharp weather, frost and snow from N.W. and W.N.W. The consequence has, apparently, been a considerable migration of the laggards from Scandinavia, for Mr. Gätke reports as follows:—"January. Night, from 27th to 28th, *Turdus pilaris*, countless flights. 29th, from 9 a.m. and earlier to 4 p.m., *Colymbus septentrionalis*. An uninterrupted stream of birds from N.N.E. to S.S.W. passing to the east of the island. Constantly from eight to twelve in focus of glass. February 2nd, East in the morning; N. and N. by E. in the evening, *Turdus merula*, from twenty to forty, as I fancy from the north." In North Lincolnshire we have had scarcely any Snipe this winter, and I have only shot a couple, and these early in the season. Of Jack Snipe I have not seen a single example—not even in the local game-shops. The total absence of the latter is curious, as there are many favourite haunts in this district, where, in other seasons,

I have never failed to find them. There are two printer's errors in my last notes in 'The Zoologist,' February, 1878: page 49, line 20—for "*Misletoe*" read *Mistletoe*; page 51—for "a *Harelda*" read *A. harelda*.—J. CORDEAUX (Great Cotes, Ulceby).

[We should like to know what authority there is for using *Harelda* as a specific name. As a generic name, instituted by Leach, it is familiar enough.—ED.]

THE FALCONRY CLUB.—The attention of all who are interested in "Falconry" is invited to the organization, now in progress, of a Club having for its object the rescue from extinction of this noble sport of our ancestors, and the promotion and extension of its practice. For some months past there has been located in the Alexandra Park one of the largest establishments of trained hawks, falcons, and cormorants in Europe. The owner of these birds, Captain Dugmore (64th Regiment), well known as a practical falconer of twenty years' standing, yielding to the solicitations of several friends, has kindly consented, not only to allow his entire establishment to be made available, without limit, for the use of a Club, if one can be organized, but also to increase it to such a strength, and to place it on such a footing, as shall render it amply sufficient for all purposes for which it can possibly be required. This liberal offer on the part of Captain Dugmore has removed the great difficulty which has hitherto stood in the way of the formation of such Hawking Clubs as have been from time to time proposed, *i.e.*, the necessity of a very heavy outlay at starting, in getting together the necessary hawks and the professional falconers (an all but extinct race) to attend to them, as well as the incurring on the part of members of an amount of pecuniary responsibility for working expenses which few gentlemen might care to accept. In the present instance the liability of members will be limited to the amount of their annual subscriptions, as Captain Dugmore (who has consented to act as master, with the assistance of a deputy master to represent him in his absence), undertakes all pecuniary liabilities, and makes good all deficiencies. These conditions will place a Club in such an exceptionally favourable position at starting, that the opportunity appears to the promoters one that should not be allowed to pass; the more so, since Captain Dugmore has intimated his intention of breaking up his establishment, should the present attempt to revive the art and practice of falconry not meet with support. The position of Captain Dugmore as regards the Club will be similar to that of a master of foxhounds hunting a specified county with his own hounds and servants, assisted by a subsidiary subscription from the members of the hunt; but, as he wishes the Club to start as free and as little hampered as possible, he does not stipulate for the collection of any particular amount; although, while he will continue

for the present to provide the *bulk* of the required funds, the scale on which the undertaking will be carried out must, of course, depend in some measure on the amount of support which the promoters are able to secure for him. As the working of such a Club as that contemplated must necessarily be attended with considerable expense, since extra falconers and extra hawks are required to render it constantly available for all kinds of sport, it is proposed that the annual subscription of members shall be *five guineas*. The election of members will be left to a committee of noblemen and gentlemen well known in sporting circles. Among the advantages to be enjoyed may be enumerated the following:—(1.) Admission at all reasonable times to the headquarters of the Club, and the mews of the hawks in the Alexandra Park, and free access to the falconers, who will give practical instruction and assistance, when required, in everything connected with the management, training, and flying of hawks. Members can also have their own hawks taken care of temporarily at the Club headquarters, on payment of a fair fixed rate for their keep. (2.) Participation in hawking parties, which will be arranged to suit the convenience of members in any suitable localities that may be desired, such as the Isle of Thanet, for heron-hawking; Salisbury Plain, Dunstable Downs, the Berkshire Downs, Aldershot and Bagshot, for rook-hawking; possibly the Curragh for magpie-hawking; and perhaps meets may be also arranged on the Continent, to suit foreign members, but this can hardly be undertaken during the first season. (3.) Exceptional facilities in procuring hawks, a number of which will be to spare every year at the close of the regular season, since only particular favourites are ever moulted by Captain Dugmore. Members will have a preferential right to obtain such spare hawks at a much lower price than would be charged to outsiders. Members can also have their servants trained as falconers at the Club headquarters; though the resident falconers will of course expect, and be permitted to receive, a small fee for such services, involving, as they would do, much extra time and trouble. If desired, young hawks can be hacked for members at the Master's Hawking Lodge, in Ireland, which is kept up for that purpose. (4.) The use, at all practicable times, of hawks for flying to the lure in the Park. Individual members will also be permitted the use of a falconer and a few hawks or cormorants (for fishing) at their respective residences, whenever they can be spared without detriment to the interests of the Club. If sufficient support is forthcoming, the staff of falconers will be increased for this purpose, as it is thought that members possessing grouse moors or partridge shooting may be glad to enjoy a few days' game-hawking in the proper season.—As the hawking season commenced on the 1st of February, gentlemen who may be disposed to encourage the project, and join in reviving the grand old sport of "Falconry," are invited to communicate at once with—THE EDITOR.

ON THE ORTHOGRAPHY OF THE GENUS *CHROICOCEPHALUS*.—In 1836, Mr. T. C. Eyton (Hist. Rarer Brit. Birds, p. 57) proposed “the name *Chroicocephalus* for a new subgenus under *Larus*, Linn., for the reception of such gulls as have the tarsi slender, thighs considerably denuded, hind toe very small, head only, or head and upper part of neck, dark-coloured in the summer state of plumage;” and in a footnote he added that the name was “derived from two Greek words, *χρῖκος*, coloured, and *κεφαλή*, head; signifying that the birds classed under that name have coloured heads.” It is curious to trace the uncertainty that has arisen in the minds of some of the most learned ornithologists from this misprint of the first Greek word here cited. In 1839, Dr. William Jameson (Journ. Asiat. Soc., viii., 241), in a “report on the Museum of the Asiatic Society,” mentions “*Larus kroikocephalus*” as referable to “the genus *kroikocephalus* of Eton” [*sic*]; and he remarks: “The name we have adopted is one which we have proposed to the Wernerian Society, being the generic one of Eton [*sic*] reduced to trivial value.” The late Dr. T. C. Jerdon (‘Birds of India,’ 1864, p. 831) was so far misled by this violation of the laws of language and of nomenclature as to adopt “*kroikocephalus*” as a generic name. In 1841, H. E. Strickland (Ann. Nat. Hist., vii., 40) in a “commentary on Mr. G. R. Gray’s ‘Genera of Birds,’” simply remarks: “*Chroicocephalus* should be written *Chræcocephalus*,” thus regarding the first two vowels as forming a diphthong. His untenable correction has been extensively adopted. In 1842, Professor Agassiz (‘Nomenclator Zoologicus’) was so confused by Eyton’s Greek spelling as to derive *Chroicocephalus* from *χρῖς* = colour, by a process comprehensible only to himself. In 1851, Dr. Reichenbach, in a “Systema Avium” prefixed to a copy of his “Handbuch der Speciellen Ornithologie,” gives as a division of his family *Larinæ* the genus “*Chroiocephalus*, Eyton,” as if misled by Agassiz’ false étymon. In 1871, Messrs. Sclater and Salvin, in a “revision of the neo-tropical *Laridæ*” (Proc. Zool. Soc., p. 576), group the hooded gulls under the genus *Chroocephalus*, with the following explanatory foot-note: “Usually written *Chroicocephalus*, or *Chræcocephalus*, as amended by Strickland. But if, as we suppose, the derivation is from *χρῶς*, *χρῶς*, colour, this [*Chroocephalus*] is the proper orthography.” But the need for all this conjecture vanishes when it is known that there exists an adjective, *χρῶϊκος*, meaning coloured. The larger lexicons, such as Stephanus’ great ‘Thesaurus Linguae Græcæ’ (9 vols., folio, Paris, 1865), gives the word as having been used by Justin Martyr about the year 150 A.D.; the exact reference to Otto’s edition is vol. iii., part I., p. 204 B, and the quotation in full is ἐν τοῖς χρῶϊκοῖς τὸ χρῶμα = “in coloured things there is colour.” Nothing further is necessary to prove that Eyton’s original spelling of his name *Chroicocephalus*

(if we add the marks of diæresis over the second vowel) is the only right one, in view of the meaning he intended to convey.—HENRY T. WHARTON.

GOLDEN ORIOLE IN CORNWALL IN THE WINTER.—I am not aware that there is any record of the Golden Oriole having been observed in the British Isles during the winter months. I think, however, although I have not seen the specimen myself, that I may mention the fact of one having been observed at Tehidy Park, near Redruth, the residence of G. L. Basset, Esq., a few weeks since, on the authority of Mrs. Basset, who informed me yesterday that a gentleman who was on a visit at Tehidy told her that he had seen in the plantations what he knew to be a Golden Oriole, in full brilliant plumage, and that it could not be mistaken by any one who knew and had seen the bird before.—EDWARD HEARLE RODD (Penzance).

[It is possible that the Green Woodpecker may have been mistaken for it.—ED.]

PIED WATER RAIL IN IRELAND.—Mr. Ripley, the birdstuffer, of Feasegate, York, has received for preservation a pied specimen of the Water Rail which was shot in Ireland on the 7th January last. There is a good deal of white on the back, as well as on the upper part of the neck and head, but very little on the breast. The tertial feathers are almost pure white. This species, I think, is not so subject as many birds are to variation of plumage, and the specimen referred to therefore seems noteworthy. While I am writing, I may add that Mr. Ripley has also received for preservation a Merlin and a Bittern, both shot in December in the county of York, the former near Wetherby, the latter near Castle Howard.—JAMES BACKHOUSE, Jun. (West Bank, York).

YOUNG RING DOVES IN FEBRUARY.—On the 1st February I shot four young Ring Doves, *Columba palumbus*, at Sparham. Three of these were very young, and one retained the long downy (nestling?) filaments on one feather in each of the upper wing-coverts. This strikes me as being somewhat unusual and noteworthy.—FRANK NORGATE (Sparham, Norwich).

WHITE JAY AND PIED LAPWING NEAR YORK.—A perfectly white Jay was shot at Dunnington, near York, during the harvest of last year, while feeding on the top of a sheaf of corn. Also a fine pied specimen of the Lapwing was shot at Cottingworth, near York, in the autumn of last year. Both specimens are now in my collection.—C. H. SHARP (York).

CURIOUS DEATH OF A KINGFISHER.—On the 7th of February I picked up a Kingfisher by the side of a small brook, having a "Miller's-thumb," *Cottus gobio*, firmly fixed in its throat, by means of the long dorsal fins. The fish had, of course, been swallowed head-foremost, and it was with

great difficulty that I drew it out. The Dabchick, I think, much more frequently than the Kingfisher, loses its life in the above manner.—C. MATTHEW PRIOR (Bedford).

[On the 31st January last a Dabchick was brought to us which had been found choked precisely in the same manner, and the "Miller's-thumb" was still sticking in its throat.—ED.]

LARGE MACKAREL AT PLYMOUTH.—An enormous example of the common Mackarel, *Scomber vulgaris*, measuring two feet in length, thirteen and a quarter inches in girth, and four pounds and one ounce in weight, was taken in a drift net off Plymouth on February 9th. The colour and markings of this fine fish were of the ordinary kind, and very bright. Mr. Couch, in his 'History of British Fishes,' mentions that the largest he ever saw measured half an inch short of two feet; but Pennant speaks of one sold in London that weighed five and a quarter pounds.—J. GATCOMBE (55, Lower Durnford Street, Stonehouse, Plymouth).

SCYLLARUS ARCTUS AT PLYMOUTH.—A specimen of this rare British crustacean was brought up in a trawl off Plymouth, in the middle of January, and is now in the possession of Mr. Spence Bate, by whom it has been preserved. I have heard of but one other local example of this species having been taken, which I duly recorded some years ago.—J. GATCOMBE.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

January 17, 1878.—Professor ALLMAN, F.R.S., President, in the chair.

Mr. J. B. Kerswill, of Fairfield, St. Germans, Cornwall, was balloted for, and duly elected a Fellow of the Society.

Professor Owen, C.B., read a paper "On *Hypsiprymnodon*, Ramsay, a Genus indicative of a distinct Family (*Pleopodidae*) in the Diprotodont Section of the Marsupials." The animal in question is an inhabitant of the Rockingham Bay district of Queensland. There it sparingly frequents the dense and damp shrubs bordering the coast. It is diurnal, and feeds on insects, worms, and tuberous roots, or palm-berries. These it grasps in its fore paws, and, sitting on its haunches, munches after the manner of the Phalangens. It breeds during the rainy season, viz., February to May. Both sexes have a musky odour, are alike in size, and somewhat over a foot long. This Rat Kangaroo (*Hypsiprymnodon moschatus*) Mr. E. P.

Ramsay, of Sydney, first named and shortly described in the 'Proceedings of the Linnean Society of New South Wales.' Professor Owen now supplements this by a fuller account of its skeleton and exterior conformation. Besides noticing the peculiarities in the dentition and skull, Professor Owen dwelt on the structural conditions of the hind foot, which, curiously enough, presents a modification between that of Potoroos and Kangaroos. He then instituted comparisons between these and the feet of the Ostrich group (*Struthionidæ*), and speculated on the modifications of the five-toed feet revealed by palæontological researches, and as applicable to the *Hypsiprymnodon* and other living Marsupials, &c.

Professor St. George Mivart gave the abstract of a communication by him, entitled "Notes touching recent Researches on the *Radiolaria*." In this *résumé* of present knowledge of this interesting group of lowly organisms, the history, progress, &c., and bearings of the group were duly entered into. These remarkable marine surface-swimming and microscopic objects he proposed to arrange after the classification adopted by Professor Ernest Haeckel, but considerably modifying his arrangement. The primary groups Professor Mivart would reduce from fifteen to seven, as follows:—1, *Discida*; 2, *Flagellifera*; 3, *Entosporida*; 4, *Acanthometrida*; 5, *Polycistma*; 6, *Collozoa*; and 7, *Vesiculata*.

Several interesting botanical papers were next read, and specimens exhibited; among others, "On the Nutrition of *Drosera rotundifolia*," by Mr. Francis Darwin, in which he conclusively proves that this plant thrives on flesh.

Mr. J. R. Jackson showed a curious purse-like bird's nest, formed of wool and cotton pod, from South Africa, and forwarded by Sir Bartle Frere to Sir J. Hooker for the Kew Museum.

February 7, 1878.—Professor ALLMAN, F.R.S., President, in the chair.

Sir John Lubbock, Bart., read a paper, "Observations on the Habits of Ants, Bees, and Wasps," being his fifth contribution to the Society on this subject. The present notice is confined to Ants. In continuation of former experiments, he finds that Ants recognise old acquaintances, and speedily attack strangers. Their vaunted intelligence he regards as questionable: for example, in such cases where a thin circle of glycerine bars their access to honey which they already have visited by a paper bridge, for when the latter is taken away they do not pile up but a few grains of the surrounding earth, and thus easily cross the glycerine barrier. Notwithstanding the many observers on the habits of Ants, and the plentifulness of the nests of these creatures, it is still doubtful how their nests are commenced. Sir John's experiments show that the workers of *Lasius flavus* will not adopt an old queen from another nest. But, on the other hand, he has observed that the queen of *Myrmica ruginodius* has the

instinct of bringing up larvæ and the power of founding communities. In this field close observation is yet wanted. As to the Ants intimating to each other their discovery of food, this does not necessarily imply any power of describing localities; for it seems that rather by a simpler sign do co-workers accompany each other to the discovered treasure. Sir John's experiments again rather negative the idea of these creatures using sounds to acquaint their fellows of any repast they may come across, no summons that he could make out being given to the brotherhood, though but a short distance separated them in the experiments thereon. The affection of Ants for their friends is out-balanced by their hatred of strangers. In instances specified, a few of each were kept prisoners in separate bottles, and prevented escaping or partaking of food by the mouths of the bottles being secured with wide-meshed muslin. Those Ants outside, running freely about, again and again excitedly endeavoured to attack the strangers; but they paid no heed to their friends, neither feeding them nor aiding them to get out, though all the while fiercely biting the muslin guarding the strangers. Further experiments prove that it is by scent far more than by sight the Ants are guided in following up tracks of food, &c., which has been shifted in position after their once having partaken of it, returned to their nest, and again sallied forth in search of the repast. Ants avoid light when this is thrown into their nests, and they then congregate into the darkest corners. Taking advantage of this habit, and by a series of ingeniously-contrived experiments,—wherein strips of coloured glass, in other instances shallow cells, containing coloured solutions, such as fuchsine, bichromate of potash, chloride of copper, &c., were used,—Sir John arrives at the conclusion that Ants, like Bees, are influenced by the sensation of colour; though in the case of the Ants its effects, probably, are different from those produced on the retina of man. In the Ants experimented on, a predominate preference was given by them to red; green followed; yellow came next; while to blue they appear to have a decided aversion. On the subject of the influence of colour much yet requires to be examined, viz., the effects of chemical rays, spectroscopic experiments, &c. The longevity of Ants, again, from what these series of observations elucidate, would appear to be greater than the generality of authorities admit; for some specimens of *Formica fusca* in Sir J. Lubbock's possession are now at least five years old, and still lively.

Mr. Thiselton Dyer made a brief communication on the so-called "Rain Tree," of Mogobamba, South America, which promised to excite as much interest amongst residents in hot, dry countries as the supposed anti-malarious properties of the "Fever Tree" (*Eucalyptus globulus*) had done amongst inhabitants of hot, wet ones. From information from Mr. Spruce it seemed probable that the "Rain Tree" was *Pithecolobium Saman*, and the so-called "rain" the fluid excreta of Cicadas which fed on the juices of

the foliage. The whole phenomenon was comparable to the production of honeydew from the Lime by the agency of Aphides.

Then followed a paper "On the Shell of the *Bryozoa*," by Mr. Arthur W. Waters. The points he more particularly drew attention to were the great difference of the young and old cells, caused by a constant growth of shell substance, so that the older zooecia become closed up. This growth progresses at various rates. Passing through the shell are tubes filled with corpuscles of the chylaqueous fluid, which thus become oxidised. The supposed nervous filament of the colonial connection the author believes to be rather for the supply of material from one part of the zoarium to another. He further suggests that the varying thickness of the plates in the walls of the colonial connection should be used as a factor in specific determination, and especially would it be useful in comparing recent and fossil forms. There is a possibility of the avicularia and adventitious tubes being homologous, and helping to maintain the vitality of the colony when the polypides have disappeared.

Messrs. A. G. Agar and C. Berjeau were elected Fellows of the Society.

The President, having put the motion, it was unanimously resolved to present an address to Professor C. T. Ernest von Siebold on his approaching jubilee.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

February 5, 1878.—Prof. MIVART, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of January, and called especial attention to a Japanese Wild Dog (an animal apparently allied to the "Dhole" of India and the "Dingo" of Australia), presented by Mr. Harry Pryer, of Yokohama, January 1st; and to a young Penguin (probably *Spheniscus Humboldti*), purchased January 24th.

Prof. Mivart read a paper entitled "Notes on the Fins of Elasmobranchs, with Considerations on the Nature and Homologies of Vertebrate Limbs," wherein the author detailed his dissections of the fins of Elasmobranchs, which dissections had convinced him that the paired and azygos fins are of similar nature. He represented them as having all resulted from the centripetal growth and evalescence of a primitively distinct series of cartilaginous rays developed in longitudinal folds, of which one was dorsal, one ventral, and two were lateral. He also advocated the view that the limb-girdles result from the further centripetal growth of the evalescing limb-cartilages, which growth seeks a *point d'appui*, the pectoral limb-girdles in fishes shooting upwards and downwards as well as inwards to obtain a firm support, and, at the same time, to avoid the visceral cavity. He contended that the archipterygium was not to be sought for in *Ceratodus*, which he

by no means regarded as a primitive type of structure, but rather in *Raia*, and especially in the ventrals of *Polyodon*. He objected to Gegenbauer's view that the metapterygium formed the limb-axis of the cheiropterygium, advocating instead the propterygium, or, if not that, then the mesopterygium. He cited the varying conditions described as evidences of the presence of an innate intra-organic polar force as the main agent in morphological modifications.

A communication was read from Mr. W. A. Forbes, containing an account of the birds collected by the 'Challenger' Expedition at Cape York and on the neighbouring islands. The collection consisted of sixty-one skins, referable to thirty-eight species, all or nearly all of which belonged to well-known Australian forms, one or two only being uncertain on account of the immature condition of the specimens.

A communication was read from Mr. Francis Nicholson, in which he gave an account of a small collection of birds made in the neighbourhood of Abeokuta, West Africa. Amongst these was a new species of finch, which it was proposed should be called *Amadina Sharpei*.

The Rev. S. J. Whitmee read a paper on the mode of the manifestations of anger, fear, &c., in fishes, and on the use of their spines, as observed by him during his residence in the Samoan Islands.

Messrs. P. L. Sclater and O. Salvin gave an account of the collection of birds made by Professor Steere during his recent journey across South America, from Para to Callao. The 911 specimens obtained were stated to be referable to 362 species, of which five were described as apparently new to science, and proposed to be called *Oryzoborus atrirostris*, *Myiarchus semirufus*, *Furnarius pileatus*, *Capito Steerii*, and *Crypturus transfasciatus*.

Prof. Garrod read a note on the anatomy of the Binturong, *Artictis binturong*, and the fourth portion of his series of notes on the anatomy of Passerine Birds.

Mr. Howard Saunders read a paper on the subfamily of the *Larinæ*, or Gulls, being a monographical revision of the group, which he considered to consist of the genera *Pagophila*, *Rissa*, *Larus*, *Rhodostethia* and *Xema*, containing altogether forty-nine species. With regard to *Pagophila*, he drew attention to a structural peculiarity which appeared to have been previously unnoticed—i. e., the junction of hallux to the inner toe by a serrated membrane. Mr. Saunders also remarked upon the occasional presence of a small but well-developed hind toe and claw in individuals of the Kittiwake (*Rissa tridactyla*) from Alaska.

A communication was read from Mr. Martin Jacoby, containing descriptions of some new species of Phytophagous *Coleoptera*.

Two communications were read from Lieut.-Col. R. H. Beddome. The first gave a description of a new form in the family of Tree-agames from the higher ranges of the Anamallays, proposed to be named *Lophosarea*

anamallayana. The second contained the descriptions of some new species of *Uropeltidæ*, from Southern India.

February 19, 1878.—Prof. MIVART, F.R.S., Vice-President, in the chair.

The Secretary exhibited the skin of a fine adult Cassowary, which had been obtained at Wandammen, on the Eastern Coast of the Bay of Geelvink, New Guinea, and had just been acquired by the British Museum. The species to which it belonged was believed to be undescribed, and was proposed to be called *C. altijugus*, from its peculiar high-peaked helmet.

Mr. P. Geddes read a memoir on the mechanism of the odontophore in certain *Mollusca*. In this paper the view of Cuvier—that the movements of the radula depend upon those of the underlying cartilages—was substantially revived, arguments being adduced against the more recent theory of Professor Huxley, that it runs like a chain-saw, the cartilages merely forming a pulley-block. The use of bacteria as food by *Lymnæus* was also described by the author in this paper.

Professor A. H. Garrod read some notes on the anatomy of *Tolypeutes tricinctus*, and gave remarks on other *Dasypodidæ*. A new form of *Tolypeutes*, allied to *T. conurus*, was proposed to be called *T. Muriei*.

A communication was read from Mr. J. H. Gurney, containing notes on a specimen of *Polyborus*, lately living in the Society's Gardens.

A communication was read from Mr. D. G. Elliot, containing the results of his study of the *Pteroclidæ*, or family of Sand Grouse. Nine species of *Pterocles* and two of *Syrnhantes* were recognized as composing the family.

Messrs. F. Du Cane Godman and Osbert Salvin gave descriptions of new species of Diurnal *Lepidoptera* from Central America.

A communication was read from Mr. R. Bowdler Sharpe, giving an account of a small collection of birds from the Ellice Islands.

Mr. Edward R. Alston read a note on the dentition of *Cuscus*.

A communication was read from Mr. T. F. Cheeseman, containing the description of three new species of Opisthobranchiate *Mollusca* from New Zealand.

Dr. F. Day communicated some remarks on the paper read by Mr. Whitmee at the last meeting of the Society on the manifestations of fear and anger by fishes.

A communication was read from the Marquis of Tweeddale, containing an account of a collection of birds made by Mr. A. H. Everett, in the Island of Negros, Philippines.

A second communication from the Marquis of Tweeddale contained the description of a new species of the genus *Buceros*, proposed to be called *B. semigaleatus*, from the Island of Leyte, Philippines.—P. L. SCLATER, Secretary.

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THE MAMMALS OF SHAKSPEARE.

BY HENRY REEKS, F.L.S., F.Z.S.

OWING chiefly to a perusal of the interesting articles on "The Birds of Shakspeare," which appeared many years ago in 'The Zoologist,' and which have since been reprinted in a separate form with numerous additions,* I have been induced to go carefully through the voluminous writings of that "myriad-minded man," as Coleridge aptly terms the Bard of Avon, in search of what I felt sure of finding, *viz.*, numerous references to animals—true *feræ naturæ*.

Domestic animals are repeatedly alluded to by Shakspeare; but in the following pages I have not thought it necessary to make any extracts relating to them.

Many animals are mentioned the species of which it is impossible to identify; and a few—especially among the numerous and widely-spread families of Monkeys—cannot be referred with certainty even to a particular genus.

I have not the benefit of libraries at hand for reference, still I trust the following remarks, from purely Shakspearian associations, may prove interesting to at least some of the readers of 'The Zoologist.'

It is only fair to state that Mr. Harting, in the "Introduction" to his more extended work on the 'Ornithology of Shakspeare,' mentions many of the animals—in fact, nearly all the British

* 'The Ornithology of Shakespeare: Critically Examined, Explained and Illustrated.' By J. E. Harting. London: Van Voorst. 1871.

species—to which I am able to refer. I am also indebted to Mr. Harting for many valuable hints on local provincial names, &c.

The words attributed to Caius Lucius in praise of noble Cæsar are truly applicable, although in a different sense, to Shakspeare—

“ Whose remembrance yet
Lives in men's eyes, and will to ears and tongues
Be theme and hearing ever.”

Cymbeline. Act iii., Scene 1.

THE MONKEY, *Semnopithecus* or *Colobus*.

Although Shakspeare several times alludes to Monkeys, no particular species is sufficiently characterized for identification; they may, however, doubtless be referred to the Old World family *Semnopithecidae*, which comprises the long-tailed Monkeys without cheek-pouches. The two genera of this family have a wide geographical distribution, being found in one sub-region of the Palæarctic; two ditto of the Ethiopian; and in all the sub-regions of the Oriental, as defined by Mr. A. R. Wallace.

“ On meddling *Monkey*, or on busy *Ape*.”

Midsummer Night's Dream. Act ii., Scene 2.

Monkeys were even in those days kept as pets by ladies; vide *Merchant of Venice*, Act iii., Scene 1—

TUBAL. “ One of them showed me a ring, that he had of your daughter for a *Monkey*.”

Shylock had a turquoise which he had of Leah when he was a bachelor, and would not have given “ for a wilderness of Monkeys.” *Merchant of Venice*, Act iii., Scene 1.

In *As You Like It*, Act iv., Scene 1, where Orlando wishes to marry Rosalind, and promises to be constant to her “ for ever and a day,” Rosalind replies :—

“ Say a day, without the ever. No, no, Orlando; men are April when they woo, December when they wed: maids are May when they are maids, but the sky changes when they are wives. I will be more jealous of thee than a Barbary cock-pigeon over his hen; more clamorous than a parrot against rain; more new-fangled than an Ape: more giddy in my desires than a *Monkey*.”

* * * "The strain of man's bred out
Into Baboon and *Monkey*."

Timon of Athens. Act i., Scene 1.

In *King Lear*, Act ii., Scene 4, the Fool remarks:—

"Ha, ha! he wears cruel garters. Horses are tied by the head, dogs and bears by the neck, *Monkeys* by the loins, and men by the legs," &c.

In *Macbeth*, Act iv., Scene 2, Lady Macduff applies the word monkey as an epithet to her precocious son:—

"Now God help thee, poor *Monkey*!
But how wilt thou do for a father?"

Again, in *Othello*, Act iv., Scene 1, Cassio says:—

"This is the *Monkey's* own giving out: she is persuaded I will marry her, out of her own love and flattery, not out of my promise."

THE APE.

With regard to *Apes* and *Baboons*, it is possible that some of the former mentioned by Shakspeare belong to the family *Simiidae*; but as in *Hamlet*, Act iv., Scene 1, he distinctly refers to an *Ape* with a cheek-pouch, it will be sufficient for our purpose to class the *Apes* with the *Baboons* in the family *Cynopithecidae*.

"Sometime like *Apes*, that moe and chatter at me."

The Tempest. Act ii., Scene 2.

"And all be turned to * * * * *Apes*,
With foreheads villainous low."

Id. Act iv., Scene 1.

"His glassy essence,—like an angry *Ape*."

Measure for Measure. Act ii., Scene 2.

"The fox, the *Ape*, and the humble bee
Were still at odds, being but three."

Love's Labour Lost. Act iii., Scene 1.

See also *Love's Labour Lost*, Act iv., Scene 2, and Act v., Scene 2.

JACQUES. "Well, then, if ever I thank any man, I'll thank you; but that they call compliment is like the encounter of two *dog-apes*," &c.

As You Like It. Act ii., Scene 5.

Id. Act iii., Scene 3.

Id. Act iv., Scene 1.

"What! will you not suffer me? Nay, now I see
She is your treasure, she must have a husband;
I must dance barefoot on her wedding-day,
And for your love to her, lead *Apes* in hell."

Taming of the Shrew. Act ii., Scene 1.

"I know this man well: he hath been since an *Ape*-bearer."

The Winter's Tale. Act iv., Scene 2.

Id. Act v., Scene 2.

"Out, you mad-headed *Ape*!

A weasel hath not such a deal of spleen,

As you are tossed with."

King Henry IV. Part I. Act ii., Scene 3.

"And the boy that I gave Falstaff: he had him from me Christian;
and look, if the fat villain hath not transformed him *Ape*."

Henry IV. Part II. Act ii., Scene 2.

The *Ape* is mentioned upwards of thirty times in the plays of Shakspeare; but it is unnecessary to give more than one other reference, *viz.*, that in which the cheek-pouch is referred to.

HAMLET. "Ay, sir; that soaks up the King's countenance, his rewards, his authorities. But such officers do the King best service in the end: he keeps them like an *Ape* doth nuts, in the corner of his jaw; first mouthed to be last swallowed," &c.

Hamlet. Act iv., Scene 2.

THE BABOON, *Cynocephalus* sp.?

FALSTAFF. "Not a penny. I have been content, sir, you should lay my countenance to pawn: I have grated upon my good friends for three reprieves for you and your coach-fellow, Nym; or else you had looked through the grate, like a gemini of *Baboons*."

Merry Wives of Windsor. Act ii., Scene 2.

FALSTAFF. "He a good wit! hang him, *Baboon*! his wit is as thick as Tewksbury mustard; there is no more conceit in him than is in a mallet."

Henry IV. Part II. Act ii., Scene 4.

Timon of Athens. Act i., Scene 1.

Again in *Macbeth*, Act iv., Scene 1—

2ND WITCH. "Cool it with a *Baboon's* blood:
Then the charm is firm and good."

Othello. Act i., Scene 3.

Pericles. Act. iv., Scene 6.

THE MARMOSET, *Hapale*, or *Midas* sp.?

The thirty-two known species of Marmosets have, comparatively speaking, a very limited geographical range, being confined to one sub-region (the Brazilian) of Mr. Wallace's Neotropical Region. The following reference to the Marmoset by Shakspeare must, therefore, be taken in the light of a poet's licence:—

CALIBAN. "I pr'ythee, let me bring thee where crabs grow,
And I with my long nails will dig thee pig-nuts;
Show thee a jay's nest, and instruct thee how
To snare the nimble *Marmoset*," &c.

The Tempest. Act ii., Scene 2.

BATS.

It will perhaps be sufficient to class the *Bats* of Shakspeare in the large and universally distributed family *Vespertilionidæ*.

THE COMMON BAT, *Vespertilio pipestrellus*.

"On the *Bat's* back I do fly
After summer, merrily," &c.

The Tempest. Act v., Scene 1.

Mr. Harting remarks, in his Introduction to the 'Ornithology of Shakspeare' (page 13, foot-note), "In the Midland Counties the Bat is often called 'leathern-wings.'" It is also occasionally called so in Hampshire, but more frequently *rear-mouse*.

"Some, war with *rear-mice* for their leathern wings
To make my small elves coats," &c.

Midsummer Night's Dream. Act ii., Scene 3.

Id. Act iii., Scene 2.

Macbeth, while regretting that Banquo and his son Fleance

were still alive and may find means to revenge the death of Duncan, thus addresses Lady Macbeth :—

“There’s comfort yet; they are assailable;
Then be thou jocund; ere the *Bat* hath flown
His cloister’d flight: ere, to black Hecate’s summons,
The shard-borne beetle, with his drowsy hums,
Hath rung night’s yawning peal, there shall be done
A deed of dreadful note.”

Macbeth. Act iii., Scene 2.

As the witches in *Macbeth* made use of “Baboon’s blood” when preparing a charm, so they also availed themselves of—

“Wool of *Bat*, and tongue of dog.”

Id. Act iv., Scene 1.

Hamlet, while railing at his mother for marrying the murderer of his father, says :—

“’Twere good you let him know;
For who, that’s but a queen, fair, sober, wise,
Would from a paddock, from a *Bat*, a gib,
Such dear concernings hide?”

Hamlet. Act iii., Scene 4.

(To be continued.)

ORNITHOLOGICAL NOTES FROM THE LAKE DISTRICT.

BY W. A. DURNFORD.

SINCE my last communication I have noted but few observations of interest. Whether from the unusual wetness of the season—fifty-four inches of rain having fallen here in 1877, against an average of thirty-six inches for the last four years—or from the absence of any continued frost, the visits of very few rare birds have been recorded. It must not be inferred from this that no uncommon varieties have been observed in the neighbourhood, for many may have been seen and even procured without any record having been made of the fact. Indeed, I am inclined to think that to one recorded instance of the occurrence of a rare species a dozen may be really understood to have appeared in the same district.

Towards the end of April, 1877, I paid several visits to the low-lying moorland in the vicinity of Broughton-in-Furness, and found that ten or twelve pairs of Curlews had returned to their breeding haunts, though they did not appear to have actually commenced nesting. Every effort to discover the eggs of this species, repeated throughout the following month, proved unavailing, and the nearest approach to the desired discovery was a nest from which the young had evidently just been hatched, which I came across on May 26th, whilst beating up a small piece of marshy ground situated in a deep hollow among the fells. In the same locality the number of Carrion Crows' nests was very noticeable. Almost every one of the stunted thorn-bushes, which are here sparsely scattered about on the hills, seemed to be occupied by one of these nests, placed at a height of about ten feet from the ground. Most of them were evidently old ones, and it seemed as if the Crows had occupied the locality undisturbed for many generations. One nest contained four young ones on May 19th. Some Common Sandpipers, which I met with on the edge of a small tarn during an excursion amongst the fells, appeared to be breeding, but a search after their eggs proved unavailing.

I am glad to say that the Buzzard is still plentiful on the Cumberland hills. On May 5th an energetic friend, who spends most of his spare time amongst the hills, brought me three eggs which he had obtained with great difficulty from a crag near Black Apron. His efforts to trap the old birds had failed, as had a previous attempt made by a keeper in another locality.* I learnt from this same keeper that the Dotterel is still to be found on the mountains about Wastwater, but hitherto all his attempts to discover their eggs have failed. On one occasion he could have killed three or four at a shot on the mountain known as "The Screes," but resisted doing so for the sake of the eggs he was hunting for. At the foot of this lake I was shown a fir tree from which the nest of a Buzzard was taken last spring. The situation was considered by the natives to be a most unusual one.

The most interesting specimen which came under my immediate

* If the unfortunate birds are trapped as well as their eggs taken, our correspondent will very soon be unable to rejoice that the Buzzard is plentiful. We deprecate this wholesale destruction of both old and young. If a "sitting" of eggs is taken, not much harm is done, for the birds in all probability will lay again; but if at the same time the birds are trapped or shot, what then?—ED.

notice during the year was an Osprey, shot in a wood close to this town on May 11th. Its dimensions, as taken by myself, were:—spread of wings, five feet six inches; total length, two feet one inch; and the weight was four pounds and a quarter.

My remaining notes for the month of May show that on the 2nd a flock of several hundred wild geese were seen flying north across the River Duddon about 8 A. M. On the 5th a local gunner obtained a number of Turnstones in full plumage—a fact which affords a strong argument for those who would place all sea and shore birds under the protection of an Act of Parliament, inasmuch as to omit a bird, such as the Turnstone, affords a loophole to any one who wishes to elude the Acts of Parliament at present in force, and enables them to shoot almost *ad libitum* throughout the close season. On the 12th, although young Black-headed Gulls were beginning to appear on Walney Island, the Herring Gulls on the rocky ledges of St. Bees Head showed no signs of hatching.

The Terns on Walney began to lay as soon as the Gulls had hatched, but their eggs were not plentiful before the commencement of June. On the 21st of the latter month I found in the Gullery a young Sandwich Tern almost ready to fly, as well as three freshly-laid Oystercatcher's eggs, probably a second brood. On June 2nd a friend dug out a nest containing Shieldrake's eggs from amongst some sand-hills on the Cumberland coast, but an attempt to hatch them out under a hen unfortunately failed. Towards the end of July numerous broods of the young of this species might be seen amongst the sand-hills, ready at the first alarm to take refuge in a rabbit-hole.

Two Woodcock's eggs were brought to me on the 30th June, which had been taken in the early part of the season in a wood close to this town; and on the 5th I put up a pair of Long-eared Owls in the same wood, and was assured by a friend that he had taken their eggs there in previous years.

At the beginning of July I chanced to be on the railway which skirts the estuary of the Duddon, when a Kestrel rose from the embankment, within a few yards of me, with a large object in its claws. By shouting and waving the fishing-rod I had in my hand I induced it to drop its prey, which on examination proved to be a full-fledged young Cuckoo, dead though still warm. Notwithstanding its size, the hawk seemed to experience little difficulty in rising with its burden.

Whilst Partridge shooting in Hampshire, at the beginning of September, I killed an old Quail, which rose out of some barley, and a few minutes later a boy who was walking with us nearly trod upon a brood of young birds, not more than a week old. I cannot ascertain that any others of this species have been met with in this part of Lancashire, and the same remark might apply to the Red-legged Partridge, the nearest locality where the latter has occurred being, I believe, the East Riding of Yorkshire.

The Short-eared Owl has been as scarce this winter on Walney Island as it was numerous last year. Where seven or eight might have been seen in 1876 it is now extremely difficult to find a single specimen. Fortunately I have reason to think that the few that have returned have been better treated than they were last autumn, when large numbers were slaughtered for making hand-screens. I noticed one of these Owls near Lowestoft, in Suffolk, on the 11th September. On Walney I have never seen one before the middle of October.

The first of the migratory ducks appeared last autumn on the reservoirs close to the town on October 13th; but since that date I believe no more have been seen there. I fear that the rapid growth of the town and the erection of some new iron-works in the locality must account for their absence, though possibly the extreme mildness of the weather may be a sufficient cause. On the same day several Swallows were to be seen on the wing at Furness Abbey, this being the latest date at which I have heard of their being observed in this locality. On November 10th a friend who was out with me on Walney Island killed a Purple Sandpiper, and on the same occasion we saw two others of this species—the first I have hitherto noticed in the district. At the present time (February) Knots are extremely plentiful on the island; and, notwithstanding the increase in the number of guns, all the ordinary sorts of waders seem to be as plentiful as ever.

The dearth of Landrails during the past year has been noticeable everywhere; several Water-rails were, however, killed in January near Wastwater, in Cumberland. The latter are looked upon as somewhat rare visitors in this locality.

THE LAND AND FRESHWATER MOLLUSCA OF SUSSEX.

BY THE EDITOR.

(Continued from p. 94.)

Bulimus obscurus. The Dull Twist Shell.—Common during the summer and autumn months on the trunks of trees, especially the beech, and at other seasons under stones and dead wood, as well as in moss on old walls, but when very young it often escapes notice as a shell. The Rev. Revett Sheppard, in a paper in the ‘Transactions of the Linnean Society,’ says:—“These snails, particularly in their young state, show great sagacity and ingenuity by covering themselves with a coat adapted to the different situations in which they are found, and when so covered it is almost impossible for any other than a conchological eye to discover them. If its abode be on the trunk of a tree covered with lichen, then is the epidermis so constructed as to cause the shell to resemble a little knot on the bark of the tree covered with such substance. If on a smooth tree, from whose bark issue small sessile buds, as is frequently the case, it will pass off very well for one of them, and on a dry bank or the lower part of the body of a tree splashed with mud, its appearance will be that of a misshapen pointed piece of dirt.” When the shell is fully developed, this disguise is less perfect, although the coating of extraneous matter is still conspicuous.

It is somewhat curious that none of the Sussex lists include the allied *Bulimus acutus*, which, according to Mr. Gwyn Jeffreys, is to be found on downs and sand-hills on the sea-coast from Sutherlandshire to the Channel Islands, as well as throughout Wales and Ireland. There can be little doubt that it occurs in Sussex, and will be found if looked for in the situations indicated.

Bulimus montanus, or *lackhamensis*, as it is styled by Messrs. Forbes and Hanley, differs from *Bulimus obscurus* chiefly in size, being at least four times larger. I have specimens procured at Selborne, Hants, and should therefore expect to hear of its occurrence in Sussex, where it has possibly been overlooked.

Pupa secale vel juniperi. The Common Chrysalis Shell.—Plentiful on the South Downs wherever juniper-bushes occur. I have specimens from Newtimber. In the “Home Pit,” near Lewes, it is common under loose chalk-stones.—U. It is found

also in the neighbourhood of Chichester (J), Brighton (M), and Eastbourne (G). The young have their shells encrusted with earth or the spores of lichens and mosses, in the same way as *Bulimus obscurus*; and even adult specimens have occasionally a similar covering. From this circumstance Mr. Gwyn Jeffreys is of opinion that the coat is not made purposely by the animal, as suggested by the Rev. Revett Sheppard, but is involuntarily caused by the accidental adhesion of extraneous matter to the outer surface of the shell, by means of the slime, or a glutinous film which exudes from or invests the epidermis. The species of the genus *Pupa* are all of small size and gregarious habits. Besides their variation in size and colour, they may be distinguished by the curious processes called "teeth," which fence in and contract the mouth of the shell.

Pupa umbilicata, vel *cylindracea*. The Umbilicated Chrysalis Shell.—Common on the downs under stones, and on old walls under grass-roots and moss. Found also among dead leaves and beneath the bark of trees. Very common in the neighbourhood of Lewes on old walls and under chalk-stones.

Pupa marginata, vel *muscorum*. The Margined Chrysalis Shell.—Found on similar situations to the last-named and on tiled roofs of old buildings.—W.

Vertigo antivertigo. The Marsh Whorl Shell.—Rare or local. Under stones in the level near Newtimber.—B. Near Eastbourne.—G. By the side of a ditch in the level near Lewes.—U. Mr. Unwin includes it in his list under the name *palustris*, under which name it is also included amongst the shells found in the vicinity of Brighton.—M. The eight or nine species which compose the genus *Vertigo* are closely allied to *Pupa*, of which they are but miniature forms, and of similar habits. The chief difference is to be found rather in the animal than in the shell, the inhabitant of which has two tentacles instead of four, as in *Pupa*.

Vertigo pygmæa. The Dwarf Whorl Shell.—Rare. Under old bark fallen from larch rails at Cowfold, near Horsham.—B. At Uppark.—W. At the roots of moss and grass on the eastern bank of Ashcombe Plantation, Lewes.—U. In the neighbourhood of Brighton.—M.

Vertigo edentula. The Toothless Whorl Shell. — Occurs sparingly at Cowfold amongst dead leaves, and at Lindfield on

stems of *Scolopendrium vulgare*.—B. On Chailey Common, near Lewes, on the under side of the leaves of *Filix mas*.—U.

Balia perversa, vel *fragilis*. The Fragile Moss Shell.—Not uncommon under lichens and the bark of thorns on the Downs.—H. On old ash trees at Offham, near Lewes, and on the garden wall of the Rectory at East Blatchington, near Seaford.—B. Common near Brighton (M) and at Eastbourne (G). In the neighbourhood of Uppark it is one of the commonest shells, and may be collected in great numbers on the mossy bark of old beech trees.—W and H.

Clausilia laminata. The Laminated Close Shell.—The shells of the genus *Clausilia* are worth examining carefully on account of a remarkable peculiarity in structure—namely, a lid to the mouth of the shell, which closes, so to say, with a spring. If the outer part of the last whorl be broken off, there will be found a spoon-shaped calcareous plate or valve, attached to the colum of the spire by an elastic filament. When the animal protrudes from its shell, this plate is thrust aside, and when it withdraws it closes the door, as it were, behind it. This curious structure, and also the plaits of the mouth, which are intimately connected with it, are not formed until the animal has nearly reached maturity.* Four species of the genus are found in Sussex. *Clausilia laminata*, about three-quarters of an inch in length, is common under stones, dead leaves, &c., and is fond of ascending trees in wet weather. Mr. Unwin includes it in his 'List of Lewes Shells' under the specific name *bidens*.

Clausilia buplicata. The Folded Closed Shell.—About half an inch in length. Abundant on old trees and walls, and under dead wood in shady places.

Clausilia nigricans, vel *rugosa*, vel *perversa*. The Dark Close Shell.—Smaller than the last named, and the smallest of the four species included in this catalogue. Equally common with the last-mentioned on walls, fences and trees, amongst moss and under stones in the same localities. Abundant in the neighbourhood of Lewes, where Mr. Unwin has frequently met with the variety *C. parvula*.

Clausilia Rolphi. Rolph's Close Shell.—Larger than *nigricans* and a little smaller than *buplicata*. Sparingly distributed amongst moss and under dead wood, especially on the chalk. Found at

* C. f. J. E. Gray, 'Zoological Journal,' i., p. 212.

Newtimber and between Brighton and Lewes. The only locality *off the chalk* in which I have found it is Flexham Park, near Petworth.—B. Not uncommon in the vicinity of Uppark.—W. Coghurst Wood, Hastings (H), and in the neighbourhood of Brighton, where, however, it is considered rare (M). It is generally found in damp situations in woods amongst dead leaves and moss, and under nettles and *Mercurialis perennis*, as well as on the trunks of trees.

Azeca tridens. The Glossy Trident Shell.—May be regarded as a link between *Bulinus* and *Clausilia*. Very local; amongst moss on the sides of bushy valleys of the South Downs, and occasionally in woods near the South Downs. Abundant in a valley near Dalegate, in the parish of Newtimber.—B. Found occasionally in the neighbourhood of Uppark in company with *Zua lubrica*.—W.

Zua lubrica. The Common Varnished Shell.—Abundant under stones and leaves; at the bottom of walls and posts where sheltered by herbage; and amongst the roots of grass in meadows.

Mr. Gwyn Jeffreys places this and the last-named species in the same genus, *Cochlicopa*, notwithstanding their very different structure. *Azeca tridens* has the mouth furnished with teeth and folds, the outer lip notched and the inner lip thickened. *Zua lubrica* possesses exactly opposite characters.

Achatina acicula. The Needle Agate Shell.—Under chalk on the South Downs; often buried some inches below the surface, and may be mistaken at first sight for a little white maggot, the shell being long, thin and cylindrical, and rather smooth. It is not uncommon on the hills around Hollingbury Camp, near Brighton, and on Clayton Hill, one of the South Downs range.—B. Also at the foot of East Harting Down.—W. It is probably local rather than rare, and seems to be confined to localities where the soil is calcareous.

FAM. CARYCHIDÆ.

Carychium minimum. The Little Sedge Shell.—May be looked for at the roots of grass and other plants, and amongst moss in damp situations. In winter it may be discovered in the hollow stems of the larger umbelliferous marsh plants. From its very minute size, being one of the smallest of our land shells, a careful

search for it is necessary. In appearance the shell is not very unlike *Pupa*, but more transparent, with fewer whorls and with the spire less blunted. Mr. Unwin notes it as rare in the neighbourhood of Lewes. He has found it at the roots of moss (*Hypnum lutescens* and *cuspidatum*), on a moist bank sloping towards the "Cut," near Landport.

Mr. Borrer would include amongst the Land and Freshwater Mollusca of Sussex, *Conovulus denticulatus* and *C. bidentatus*, which he notes as occurring in brackish marshes under stones and amongst roots, and abundant around Newhaven and near Shoreham Bridge. Mr. Gwyn Jeffreys, on the other hand, considers that they should be "excluded from the category of land shells, and placed with those having a marine habitat." The late Dr. Gray, in his edition of Turton's 'Manual of the Land and Freshwater Shells of the British Islands,' places these two species in the same family (*Auriculidæ*) with *Carychium minimum*, and remarks:—"These Mollusca appear by habit and character to be exactly intermediate between the land and freshwater univalve Mollusca. They have the sessile eyes of the Pond-snails, placed behind instead of in front of the tentacles of the land-snails; but the tentacles are not retractile under the skin of the neck. In the same way the *Carychia* and *Acmea* are terrestrial, living in damp moss; the *Conovuli* live in the mud at the mouths of rivers, or in the sea—they seldom leave salt, or at least brackish water."

Fam. CYCLOSTOMATIDÆ.

Cyclostoma elegans. The Elegant Circle Shell.—In hedges and under stones on the chalk. Abundant in the copses under the South Downs. The mouth of this shell is closed with a very solid operculum, covered on both sides with a thick epidermis, a double fringe of which completely encircles it, and causes it to appear laminated. The animal itself is of very shy and retiring habits, and in dry weather buries itself in the earth, where it often falls a prey to carnivorous beetles, notwithstanding its closely-fitting operculum.

Acme lineata. The Striated Pointed Shell.—Amongst decayed leaves in open drains, and under stones in woods. Included in the lists from Brighton and Lewes (where Mr. Unwin marks it as rare), under the name *Segmentina lineata*.

(To be continued.)

OCCASIONAL NOTES.

OCCURRENCE OF THE BEECH MARTEN IN CORNWALL.—The Marten has become one of the rarest of our wild animals, and is regarded as almost extinct; but every now and then one is met with, and when a specimen is obtained it is always regarded as an interesting fact, not only from its rarity as a British quadruped, but also from its striking size and graceful shape, far surpassing in this respect the other members of the *Mustelidæ*, or Weasel tribe. Early in March a full-grown female Marten was captured in the immediate neighbourhood of Delabole Quarries in the north part of this county. Length twenty-three inches; length of tail nine inches and a half. I should imagine from these dimensions that it must be very inferior in size to the male, if the dimensions of authors can be depended upon, which give twenty-seven inches and a half. Its large bushy tail adds to its beauty, and at a distance the Marten resembles a gigantic Squirrel. It is very arboreal in its general habits, and is usually seen running over the long boughs of trees, apparently in pursuit of birds, squirrels, &c., upon which it feeds. It does not always exhibit agility or gracefulness in its movements; but it can do so to a great degree when called upon. It has been observed creeping stealthily like a cat on the branches of trees, apparently in pursuit of its prey. Its actions have been noticed and watched by sportsmen when hunted with fox-hounds. They appear to lose their scent, from their eagerness in recognizing it. About thirty-five years since a pack of fox-hounds, in drawing Bodethiel Coombe, in the Glynn Valley, near Bodmin, found an animal, which at a distance appeared too large for a Squirrel and too small for a Fox. When moved it fled to the tops of the brushwood and furze, and then took a course through the Coombe at a good pace to Hallow Marsh Wood, when in leaping from one tree to another it missed its footing by alighting on a rotten branch, which gave way, and it fell amongst the hounds. This was a fine adult male Marten. Although arboreal in its habits generally, it is somewhat curious that the specimen just obtained was caught by its fore-foot in a gin set in a stone quarry; and I think another was caught in a similar way not many years ago at Northam Burrows, a sandy plain in the North of Devon. As to there being two species of Marten, the colour of the breast is no criterion of specific value, for specimens have been killed in the same wood which exhibited on the breast intermediate shades of colour from pure white to primrose-yellow. (See St. John's 'Wild Sports in the Highlands,' p. 107.) The fur in the yellow-throated Pine Marten is said to be far superior in texture and quality to that of the Common Beech Marten; but this may arise from the fur becoming coarser as the animal advances in age. It seems to be a generally entertained idea that the white-breasted Marten betokens age, and that the yellow tone is a sign of adolescence. In the

Grey Plover and Wood Sandpiper the young birds have their dorsal plumage very often spotted with yellow, which becomes white in adult birds.—E. H. RODD (Penzance).

MARTEN-CAT IN WASTDALE, CUMBERLAND.—A curious fact in connection with Marten-cats has lately come under my notice. During a hunt in Wastdale (the wildest part of the Cumberland hills), an old "Mart," as this species is locally termed, was observed to rush up the face of a precipice with a young one about a quarter grown hanging on firmly to her tail. I think that no one will be sorry to hear that on this occasion both mother and young one escaped.—W. A. DURNFORD (Barrow-in-Furness).

RAT SEIZING A SNAKE.—A friend of mine was walking on the highroad, in the autumn of last year, accompanied by a sheep dog which is a good ratter, when he saw at some distance what he supposed to be a rat jumping and tumbling about in a peculiar manner. He "hied" on the dog, which to his surprise kept jumping around and barking, instead of seizing it as he expected. On a nearer approach, however, he discovered that the rat had fastened, about midway, on a large snake, the snake using its utmost endeavours to get to the hedge, and the rat doing all it could to keep it on the road. This state of things went on for some time, neither rat nor snake taking any heed of him or his dog, until at last, thinking that the snake would make its escape, he struck at and killed them both.—H. NICHOLLS (Kingsbridge, South Devon).

ORANGE VARIETY OF THE MOLE.—On March 11th an orange-coloured variety of the Mole was caught on this farm, in the parish of Waldron, near Hailsham, by a mole-catcher. He brought it to me, and I have sent it to Messrs. Pratt, of Brighton, to be preserved. A similar variety was caught on this farm about two years ago. The man also tells me he has taken several lately with orange spots, but threw them away. I am told that an orange-coloured Mole is frequently caught on an adjoining farm. My father says that on his farm in Northamptonshire a white Mole was caught some years ago.—E. LANGLEY (Horeham Manor, Hawkhurst).

[See 'Zoologist,' 1877, pp. 225, 226.—ED.]

COMMON DOLPHIN AT PLYMOUTH.—On February 20th a fine Dolphin, *Delphinus delphis*,—measuring 5 feet 6 inches in length, 3 feet 4 inches in girth, and weighing 2 cwt. 2 qrs. 27 lbs.,—was captured in a net off Plymouth. The beak, or snout, of this animal was most curiously maimed or malformed, a portion of the tip of the upper jaw being abruptly bent or doubled inwards, and its whole length turned somewhat aside as if from a tremendous blow. Thus shortened, the projecting end of the lower jaw has curved upwards in the form of a hook, giving the whole snout a remarkable appearance, which, together with its numerous small teeth, strongly reminds

one of the serrated and hooked bill of the Smew—of course, reversed or turned upside down. There was a kind of angular notch on the back, near the tail, as if a large piece had been at some time bitten out, but now quite healed and covered with skin similar to other parts of the body. This malformation of the mouth does not seem to have interfered with the animal's feeding, as it was in particularly good condition. A cast of the head has been taken and the skull preserved by Mr. Header, of Plymouth.—JOHN GATCOMBE (Durnford Street, Stonehouse, Plymouth).

THE REVIVAL OF FALCONRY.—I have read with much interest Captain Dugmore's article on "The Revival of Falconry," which appeared in your last number. May I say a word or two thereon? In the first place, I thank him for his kind and considerate mention of myself. It is not always that falconers remember my early struggles in the cause, and I should be sorry to think that my name had quite died out among them. I have been compelled to give up the sport, both this year and last, but have hardly yet lost my interest in it. For seventeen or eighteen years I flew grouse on a small moor in this manor, with a success to which my many friends will bear witness. In all that time but one year was missed. But changes come with years; and the present tenant of this extensive shooting (the acting, rather than the nominal, tenant, for there are two partners) has contrived to shut out me and mine from every, even the most trifling, privilege which he found us enjoying. He is a town man, of course; not a country man. Had it not been for this I should have seen last year, and probably for the last time, a falcon or two of my own training fly grouse. Were I a vindictive man I should glory in the certain knowledge that this person has not the smallest chance of preserving game upon the manor—not if he covered it with keepers. Well, sir, you see that my little existence as a working falconer is over. Let me turn for a moment to others. Captain Dugmore says that he knows no one in England, save Mr. Hancock, who can stuff a hawk properly. I am more fortunate. I know—and have known for thirty years—an amateur, even I think superior to Mr. Hancock in this matter,—my dear friend William Brodrick, the life and spirit of that excellent book, of which he is more than half author, "Falconry in the British Isles." And in speaking of old falconers Mr. Brodrick should never be forgotten: I can only say for myself that I am altogether indebted to him for the rudiments of the art, and that without his early kindness I should probably never have been able to write a word on Falconry, or to fly a single grouse. With regard to the Club itself, many well-known falconers object to it, on the ground that flying hawks in the Alexandra Park is a burlesque on the oldest and most romantic of our sports. I confess I do not agree with them; but I object to certain portions of my own essay on the matter,

written several years ago. What I am prepared to say now is,—and my opinion on such a point is, perhaps, hardly of much importance,—that so long as the birds are only put on the wing to the lure, and exhibited at rest (surrounded by all the tackle, means, and appliances of Falconry), no burlesque need be dreaded; but a most interesting and instructive lesson is offered to those who care to learn the first principles of the sport, with the view possibly of some day taking it up in earnest.—PEREGRINE.

CORRECTION OF ERROR.—In Capt. Dugmore's article in the last number of 'The Zoologist,' several typographical errors occurred, for which he is not responsible. In the hope that some at least may have escaped detection, we refrain from pointing them out, and take the blame for their occurrence entirely on ourselves.—ED.

NATURAL HISTORY NOTES FROM POOLE.—The past year, so far as I have been able to observe, was not distinguished for many events interesting in an ornithological point of view. The mildness of the winter was, I suppose, the reason of the particularly poor show of wild fowl with which we were favoured last year. A similar mildness this year has produced a similar result. The winter of 1876–77 was noteworthy for the numbers of Great Northern Divers and Grebes (chiefly the Slavonian Grebe) which frequented the mouth of the harbour. This year, 1877–78, there have been scarcely any. In the spring, also, the various migratory waders, such as Godwits and Grey Plovers, were unusually scarce—a great contrast to the previous year, when the Godwits in their red dress, an unusual sight on our mud-flats, were very plentiful. A fine Crested Grebe was seen in the harbour at the end of April, in perfect adult plumage. I also observed a very nice-looking Garganey, or Summer Teal. I believe a brood or two are usually hatched off in this neighbourhood. In May I came across a breeding-place of the Ringed Plover, situated on a gravel spit. I found twenty eggs here in about an hour. A pair of Oystercatchers, from their actions, had evidently a nest here as well, but I did not find it. There are two breeding-places, at least, of the Black-headed Gull in the vicinity of the harbour—one at Littlesea, between the harbour and Studland Bay; the other in a heath-pond made for ducks by Mr. Calcraft, of Kempstone. As the season advanced, numerous family parties of ducks came down to the mud-flats, and with them a good show of Teal, which assembled in considerable numbers by the 1st August; but, after having been shot at for a day or two, they departed to the numerous ponds, such as those at Crichel, Morden Park, Littlesea, &c., where they are strictly preserved; and as there has been no hard weather to drive them out, we have not seen them since. In September, a few waders, such as Redshanks, Knots, Godwits, Curlew Sandpipers, &c., made their appearance, but only in small numbers. I killed a dozen Knots and six Curlew Sandpipers at one shot.

Early in the month, a brother of mine obtained a Spotted Redshank at the point where the Frome enters the estuary, a bird which I never happened to meet with here before, although no doubt it occurs here annually. Curlews and Sheldrakes breed in some numbers round the harbour, and will no doubt gradually increase in consequence of the protection afforded to them. The Sheldrakes leave us about September, and we see no more of them until the first hard weather before Christmas, which, if severe, brings in a good many, some of these stopping and bringing up their young. I only saw one Grey Phalarope last season, on the 16th October, in South Deep, at the mouth of the harbour. On the 17th I saw the first Northern Diver, at the Half-way Diver buoy, not far from Poole, and I shot it with my punt-gun. It was, however, an immature bird, weighing nine pounds. On the 1st November I saw a beautiful adult bird of this species in Studland Bay, but failed to obtain it. On 12th November, a man employed on the bridge where the railway spans the estuary between Wareham and Poole, caught a specimen of the Fork-tailed Petrel alive, the day after the very severe gale. On the 20th of the same month a Swallow was flying backwards and forwards, on the south front of our house, nearly the whole day. On the 21st February, a family of young Song Thrushes left the nest in which they were hatched, in a small thicket close to the house. An unusual number of sprats in Poole Bay, about the beginning of January, brought a large number of Kittiwakes, Guillemots, Razorbills and Red-throated Divers, and an unusual show of Gannets. These fine birds do not plunge for the sprats as for larger fish, but skim along the top of the water, and occasionally get so gorged as to be unable to get on the wing. I have noticed them in this state, particularly at the slack of the tide. A few Oystercatchers arrived the first week in March to have a look at their breeding-places. There have been none about the mud-flats since October. The Black-headed Gulls were assuming their spring plumage for a month previously, and Snipes occasionally drumming for a still longer period. About the beginning of April a pair or two of Sandwich Terns nearly always make their appearance, and in August a lot of young ones are to be seen about, the buoys at the harbour-mouth being a favourite place of theirs. They may possibly breed here, but I have never had any proof of it.—T. M. PIKE (Westport, Wareham).

ORNITHOLOGICAL NOTES FROM DEVON.—An Iceland Gull was killed in Plymouth Sound on December 1st. The plumage was nearly white, with very faint markings of brown; indeed so faint that I should think at the next moult the back would have assumed the light bluish gray of the adult state. On the 3rd I saw two Black Redstarts on the coast, and watched a Northern Diver having a long struggle with an eel, which it had some difficulty in mastering. I also observed a flock of about a dozen Purple

Sandpipers on the rocks at the Devil's Point, Stonehouse; so many are not often seen together on this part of the coast. Kittiwakes are now plentiful; and a friend who has just returned from America tells me that Kittiwakes were constantly following in the wake of the ship, the whole way from New York to within about a hundred miles of the coast of Ireland, when their place was taken by Black-backed Gulls, both young and old. He also informed me that the common Sparrow is now as plentiful in New York as in any part of England, and that he was much surprised to see so many varieties among them, a large proportion being more or less marked with white. Can this be owing to change of climate? Whilst on the subject of varieties I may here mention that a Chaffinch having a pure white tail has lately been seen near Plymouth; a Bullfinch has been caught, with the top of its head white; and a few days since I examined a pretty pied Blackbird, strange to say the largest bird of its species I ever saw. During January, considering the general mildness of the weather, a tolerable number of Wigeon and Teal were exposed for sale in our market, together with an adult female Goosander, a young Goldeneye, and a few Pochards. Occasionally I heard flocks of Wigeon flying up the River Tamar after dark. A little Grebe was brought to a local bird-stuffer, with its breast still clouded with dusky as in the breeding season, but without any traces of chestnut on the cheeks; its stomach contained nothing but the remains of shrimps. On February 1st I examined a common Guillemot, which had already assumed its full breeding dress; and on the 10th observed *Larus ridibundus*, showing apparently the full dark head; and by the 19th several more in various states of change. On this date I first heard the spring cry of the Herring Gull, and was much interested in watching thirteen Herons in the middle of a ploughed field among flocks of Lapwings and Golden Plovers. About one half the Herons were at rest, but the others cautiously stalking about the field, with partially contracted necks, which were often darted forward, apparently to strike at earthworms, grubs, and insects. On the 20th February a Bartailed Godwit was killed near Plymouth—a very uncommon species with us at this season, but tolerably numerous in the autumn and sometimes during spring. Chaffinches are now in full song, and I have remarked Pied Wagtails in perfect breeding dress. A gentleman shooting on Dartmoor, not long since, killed a Snipe, but before he could pick it up, a falcon, or hawk of some species, dashed down and carried it off. Instances of this kind, I have heard, are not very uncommon; indeed, when shooting from a boat, I have known Dunlins carried off from the water, by the larger Gulls, in a similar manner.—JOHN GATCOMBE.

BIRDS STRIKING THE LANTERNS OF LIGHTHOUSES.—With regard to Mr. E. T. Booth's remarks (p. 100) on the "Migration of Birds in the

Autumn," there is no doubt that much fewer birds now strike the lanterns than was formerly the case. This is probably not due to any actual decrease in the number of migrants, but to the present modern system of lighting. A very intelligent lighthouse principal lately explained to me exactly how this happened. Formerly, he said, when birds approached the lantern they were dazzled and confused by the glare of many lamps, backed by the highly polished mass of reflectors. Now, however, the rays from the large central lamp are collected by the lenses and deflected in a line parallel to the horizon: the consequence is that when birds approach the light they are not to the same extent dazed by the glare, but have sufficient time to discern the obstacle opposing them, and swerve either to the right or left. With reference to the editorial note appended to my own communication (p. 103), after looking through all the authorities for the specific and generic names of the Longtailed Duck, from Fleming (1822) downwards, and finding nobody to back me up, I admit that I was in error when I wrote *Harelda* as a specific name for that species.—JOHN CORDEAUX (Great Cotes, Ulceby).

SINGULAR IMMIGRATION OF JAYS INTO OXFORDSHIRE.—Having often had occasion to go into Oxfordshire, during the last few years, I have had good opportunities for observing most of the local birds, and I now wish to chronicle a wonderful increase of Jays in that county during the last six months. Up to October last it was a very rare sight to meet with them in the open country, and even in the woods they were far from plentiful. On March 16th, last year, I noticed three frequenting a large gorse covert; these, I think, had been driven there from a neighbouring wood by the hounds. I am told two examples only were seen in the summer months, and so only one nest could have been brought off in the vicinity. But on October 18th, last year, I saw several Jays; and on the 18th I observed two coming directly overhead, to the north, at an immense height. These, however, as far as I am aware, did not settle in the neighbourhood. By the 22nd they were exceedingly plentiful; and I am informed they were there in equal numbers all through the winter. A few days ago I had the pleasure of seeing certainly twelve Jays, about twenty Magpies, and a Sparrowhawk, in the course of a short walk. I shall be interested to hear whether they stop to breed.—C. MATTHEW PRIOR (Bedford).

THE HABITS OF THE MERLIN.—During the winter months, immature birds of this species are frequently met with in the south, though the true home of this dashing little hawk is evidently in the land of the heather and mist. They are said to be very destructive to game, and as such usually pay the penalty that the possession of a bad name incurs. Whether it is that my own experience with regard to this bird has been too limited to form a correct judgment, I am unable to say; but I hardly think that

they are the desperate characters that they are generally described. Those which I have seen in the south were usually in pursuit of small birds, and while seeking this sort of prey they are frequently captured in the clap-nets that abound near Brighton. On the grouse moors in the north, I have examined the remains of the victims that they have consumed near their nests, and never found anything larger than a Dunlin, which bird, with larks, pipits, and large moths (principally of the Eggar species), seemed to make up their bill of fare. Though frequenting most of the wild, rocky glens in the Highlands, they seem to have a partiality for the more open moors, being particularly numerous in the flat parts of Sutherland and Caithness. The nest is generally placed amongst the heather on the ground in the open moor. In one case, however, I took the eggs from the face of a rock overhanging a hill loch in Ross-shire. The female was shot, but, being a good deal injured, was not retained; while the male, falling winged among large stones, managed to make good his escape into some hole before I could reach the spot. While searching for him, I stumbled on one of the best concealed whiskey-stills I ever met with. It will certainly be a particularly 'cute exciseman that discovers its whereabouts without the help of previous information.—E. T. BOOTH (Dyke Road, Brighton).

POMATORHINE SKUA AND PUFFIN IN BERKSHIRE.—In a bird-stuffer's shop in Newbury, I lately saw the remains of a Pomatorhine Skua in nearly full plumage. This bird was killed in a wood near Newbury, by a farmer, on or about October 25th last, and was brought to its present possessor to make into a fan; and as now mounted wants the plumage of the back and both legs. The centre feathers of the tail were shot away, which accounts for its capture having attracted so little attention, it being mistaken for a Black-backed Gull; though judging from the colour of its wings, tail, and head, its back must have been of a dark brown colour. It proved on dissection to be a male, and was in very poor condition. In the same shop was a Puffin, which, on December 21st last, was seen by a man, named Harris, to rise from a ditch, near Newbury, and was knocked down with a whip.—H. M. WALLIS (Dorset Villa, Reading).

GREY PHALAROPE IN HANTS.—I have to record the occurrence of two specimens of this pretty little species. One on October 15th, shot upon a pond in the New Forest, which it had frequented for some days previously; and the man who shot it said he could not but admire the graceful deportment of this elegant bird as it moved about upon the water, almost like a miniature Swan. It is a pity his admiration had not prompted a better feeling than killing the interesting little creature. The other specimen was killed, November 17th, somewhere upon the River Avon.—G. B. CORBIN (Ringwood, Hants).

PUGNACITY OF THE MOORHEN.—Moorhens are very pugnacious birds, and are always fighting amongst themselves; but I was perfectly surprised a few days ago, when going to pick up a wounded one, to see it come at me "open-mouthed," and repeatedly fly up and peck my legs.—C. MATTHEW PRIOR (Bedford).

HARLEQUIN DUCK AT FILEY.—During my stay at Scarborough, I purchased of Mr. Roberts, the well-known naturalist, a Harlequin Duck which he told me was shot at Filey about ten years ago. I mention this occurrence, as this duck has been killed on so few occasions in this country, and I have never seen this specimen mentioned in any book on Natural History.—J. WHITAKER (Rainworth Lodge, Mansfield, Notts).

[The recorded instances of the occurrence of this duck in a wild state in this country are mostly doubtful. In several cases subsequent examination showed that the birds in question were young Long-tailed Ducks, and in one instance a so-called Harlequin Duck proved to be a female Scaup. See Professor Newton's remarks on this subject in 'The Ibis' for 1859, p. 162.—ED.]

GREY CROW IN YORKSHIRE IN SUMMER.—When staying at Scarborough last summer, I went to see the sea-fowl breeding at Flamborough Head, and when standing on the cliff a Grey Crow flew past. This was on the 15th June, at which date I was much surprised to see a Grey Crow so far south.—J. WHITAKER.

MANX SHEARWATER IN OXFORDSHIRE.—It may be as well to put on record the occurrence of a bird of the above species, at Chipping Norton, in the winter of 1872—73. Two other examples are said to have been caught there (see Morris's 'British Birds'). It was brought to Banbury to be stuffed, and is now in my possession.—C. MATTHEW PRIOR (Bedford).

HYBERNATION OF THE SLOW-WORM.—On March 2nd a man in removing part of a hedge-bank found four young Slow-worms of two different sizes all coiled up together into a ball. They were in the earth in the centre of the bank, about a foot from the surface. The man noticed no leaves or grass, or any kind of nest, nor any hole communicating with the surface, though there probably was a small passage. Three of these reptiles were alike in size,—three and one-eighth inches long by one-eighth of an inch in diameter. The fourth was about six and a quarter inches long, and about a quarter of an inch thick. No full-grown Slow-worm was found.—FRANK NORGATE (Sparham, Norwich).

SCYLLARUS ARCTUS OFF PENZANCE.—*Scyllarus arctus* has again been taken in this bay by a trawler, and brought to me alive. There can be no doubt that this very rare British crustacean is fairly common in our western seas. I now have received some dozen or more specimens,—some alive, some dead, and one in berry; and several have been taken off Plymouth. This particular specimen fell to my lot through the kindness of Miss Tyacke, our well-known conchologist.—T. CORNISH (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

February 21, 1878.—W. CARRUTHERS, Esq., F.R.S., Vice-President, in the chair.

The following gentlemen were ballotted for and duly elected Fellows of the Society:—Dr. Hance, of China; Mr. Edward Milner, 32, New Cavendish Street, W.; Dr. George Shearer, 57, Upper Parliament Street, Liverpool; and the Rev. Robert Boog Watson, B.A., 3, Bruntsfield Place Edinburgh.

Among exhibitions of specimens and remarks thereon were—examples of *Spongilla Carteri*, by Mr. E. Lockwood; a remarkable oak gall of *Aphilothrix Sieboldii* (Hart.), obtained at Willesboro' Leas, Ashford, by Mr. E. M. Holmes, of the Pharmaceutical Society; and several other botanical rarities.

The only zoological paper read was "On the Butterflies in the Collection of the British Museum hitherto referred to the Genus *Euplexa* of Fabricius," by Mr. A. G. Butler. The author states that in his monograph in the 'Proceedings of the Zoological Society' (1866), he himself had split up the genus in question somewhat arbitrarily, overlooking the fact that several natural genera existed. He now further criticises Mr. Scudder's paper "On the Generic Names proposed for Butterflies." He observes that Mr. Scudder in his revision frequently supersedes a name long in use by the resuscitation of a partial synonym. For example, *Euplexa* is discarded in favour of a name applied to two only of its species. This Mr. Butler deprecates, on the ground that it is not a help, but a hindrance, to the advancement of Science; as also the fact that Mr. Scudder ignores the rule of the British Association respecting the uses of the terminations *ida* and *ina* for families and subfamilies. Mr. Butler, in emendation of his own former work, proposes, to adopt the genus *Salpina* and *Trepsichoris* of Hübner, to fix the limits of his genus *Calliplexa*, and to add a genus for the

reception of all those species the males of which have *two* brands upon the interno-median area of primaries. For this latter group he coins the name *Stictoplæa*. These brands in the *Stictoplæa* he conceives are for purposes of strigillation. Then follows a list containing the species under each genus of the series contained in the British Museum Cabinets, with notes of elucidation.

March 7, 1878.—Dr. GWYN JEFFREYS, Vice-President, in the chair.

Mr. Charles C. P. Hobkirk, of Huddersfield, was ballotted for, and elected a Fellow of the Society.

Prof. Ray Lankester exhibited and made remarks on a valuable series of fossil Walrus tusks (*Trichecodon Huxleyi*) from the Suffolk Crag, sent to him for examination by Mr. J. E. Taylor, of the Ipswich Museum.

Mr. Rich exhibited some examples of a new variety of *Helix virgata*, forwarded to him from Ireland.

The first zoological paper read was "On some New Species of Nudibranchiate Mollusca from the Eastern Seas," by Dr. Cuthbert Collingwood. The author remarked that zoologists and voyagers who pay but brief visits to the tropical coasts are less likely to obtain new or interesting forms of the Nudibranchiates than are residents searching carefully within limited areas. Thus he accounts for Sir W. Elliot's Madras, and Kelaart's Ceylon, gatherings surpassing expeditions fully equipped for collection. The gay colouring of the group is equally found on our own shores, less climatically favoured, as on those of the tropics. Seasonal and other influences probably have much to do with abundance or scarcity of species, even in a given locality, where previously known to exist. Dr. Collingwood noticed some curious instances in which specimens isolated in a dish of sea-water spontaneously, and very neatly, amputate the region of their own mouths. He then described the following sixteen new species, and exhibited coloured drawings from Nature, showing the animals in the expanded and contracted conditions:—(1) *Doris pecten*, (2) *D. crescentica*, (3) *Chromodoris iris*, (4) *C. Bullockii*, (5) *C. aureo-purpurea*, (6) *C. tumulifera*, (7) *C. tenuis*, (8) *C. funerea*, (9) *C. Alderi*, (10) *Albania formosa*, (11) *Triopa principis-Wallia*, (12) *Trevelyana felis*, (13) *Doridopsis arborescens*, (14) *Phyllidis spectabilis*, (15) *Freyeria variabilis*, (16) *Bornella marmorata*.

In the absence of the author, Dr. Patrick Manson, Dr. Cobbold communicated a paper "On the development of *Filaria sanguis-hominis*, and on the Mosquito considered as a Nurse." He pointed out that development cannot progress far in the host containing the parent worm; that the embryo must escape from the original host; and that in the case in question the mosquito is found to be the nurse. The latter term, "nurse," he employed

instead of the more accepted signification of helmenthologists, "intermediate host." He then gave some account of the mosquito after feeding on human blood. The female mosquitos, having gorged themselves, repair near stagnant water, and remain semi-torpid for a few days, digesting the blood and voiding gamboge-coloured fœces. They deposit their eggs, which float in sooty flakes, on the surface of the water. Soon these are hatched, and the larvæ become the familiar "jumpers" of stagnant pools. The produce of *Filaria*, he believed, is thus taken into the human system with the drinking water. Dr. Manson's method of procuring mosquitos containing embryo *Filaria* was to get a Chinaman, whose blood was previously ascertained to abound with *Filaria*, to sleep in a mosquito house. In the morning the gorged mosquitos were caught, and duly examined under the microscope. He thus ascertained that the blood ingested by the mosquito from a man suffering from *Filaria* contains a larger proportion of *Filaria* than an equal quantity of blood obtained by pricking the finger of the same man. On one slide of the latter he counted under the microscope some twenty or thirty, in the former upwards of one hundred and twenty. He remarked that all embryos do not attain maturity; and dilated on the metamorphosis of the embryo, giving drawings of the different stages as observed by himself. He concluded by remarking that the *Filaria*, escaping into the water as the mosquito dies, is through the fluid-medium conveyed to man. Within him it pierces the tissues of the alimentary canal. Development and fecundation proceed apace; and finally the embryo *Filaria*, met with in the blood, are discharged in successive swarms and in countless numbers—the genetic cycle being thus completed.

Dr. Cobbold then read a paper of his own entitled "The Life-history of *Filaria Bancrofti*, as explained by the discourses of Wucherer, Lewis, Bancroft, Manson, Sonsino, and others." This was a critical paper intended to elucidate the literary history of the discoveries of various observers, which have at length led up to a tolerably complete knowledge of the essential facts concerning this remarkable parasite. According to Dr. Cobbold, the *Filaria Bancrofti* is the sexually mature state of certain microscopic worms, obtainable either directly or indirectly from the human blood. It gives rise to more or less well marked diseases of warm climates, and a certain stage of the growth and metamorphosis of the worm takes place through the medium of blood-sucking insects. Dr. Cobbold concluded by offering some suggestions as to the best means of checking the ravages of these parasitic plagues; adding a notice of the various authors who have written on the subject.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

March 5, 1878.—Professor NEWTON, M.A., F.R.S., Vice President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of February, and called special attention to a pair of Persian Leopards, deposited by Captain Phillips on the 18th ult.

Mr. Sclater exhibited and made remarks on a second collection of birds from Duke of York Island, New Britain and New Ireland, which he had received from the Rev. George Brown.

Mr. Sclater exhibited and made remarks upon a specimen of *Athene variegata* and upon the type specimen of *Fulica gallinuloides* of King, belonging to the Museum of Science and Art, Edinburgh.

Professor Newton drew attention to the statement of Leguat that every Solitaire (*Pezophaps solitaria*) carried a stone in its gizzard, and exhibited one of three stones found by Mr. Caldwell associated with the remains of as many birds of that species in the caves of Rodriguez.

Mr. T. J. Parker described the stridulating apparatus of *Palinurus vulgaris* which consisted in a peculiar modification of the second joint of the antennæ working against the lateral surface of the antennular sternum.

A communication was read from Mr. C. Spence Bate, containing an account of the Crustaceans of the coast of Coromandel, collected by Sir Walter Elliot, K.C.S.I.

Mr. A. Boucard read notes on some *Coleoptera* of the genus *Plusiotis*, and gave descriptions of three new species from Mexico and Central America.

A communication was read from Mr. Arthur G. Butler, containing an account of a small collection of *Lepidoptera*, obtained by the Rev. J. S. Whitmee, at the Ellice Islands.

A communication was read from Mr. Edward J. Miers, on the *Penæidæ* in the collection of the British Museum.

Mr. George French Angas read a description of a new genus of land shells belonging to the family *Cyclophorida*, for which he proposed the name of *Mascaria*.

Mr. Angas also read descriptions of nine new species of land and marine shells from various localities, amongst which was a new *Rostellaria*, proposed to be named *R. luteostoma*, and a new *Bulinus* from Madagascar, proposed to be called *B. Watersi*.

A communication was read from Dr. G. E. Dobson, containing additional notes on the *Chiroptera* of Duke of York Island and the adjacent parts of New Ireland and New Britain.

A communication was read from Mr. Robert Collett, containing an account of *Latrunculus* and *Crystallogobius*, two remarkable forms of Gobioid Fishes found in Scandinavia.

March 19, 1878.—ARTHUR GROTE, Esq., Vice-President, in the chair.

The Secretary exhibited the type specimen of *Dicrurus marginatus* of Blyth, and pointed out its identity with *Muscipipra vetula* (Fam. *Tyrannida*).

Mr. J. W. Clark exhibited and made remarks on some stuffed specimens of the Sea-lion (*Otaria ursina*) of the Prybylov Islands, which had been presented to the Museum of the University of Cambridge by the Alaska Commercial Company.

A communication was read from the Marquis of Tweeddale, containing the sixth of his contributions to the Ornithology of the Philippines. The present memoir gave an account of the collections made by Mr. A. H. Everett in the Island of Leyte.

Mr. P. L. Sclater read a report on the collection of birds made during the voyage of H.M.S. 'Challenger,' in the Sandwich Islands, and pointed out the characters of a new species of duck, of which it contained specimens, and which he proposed to call *Anas Wyvilliana*.

A communication was read from Mr. W. A. Forbes, containing notes on a small collection of birds from the Samoan Islands and the Island of Rotumah, Central Pacific.

A communication was read from Mr. F. Nicholson, containing a list of the birds collected by Mr. E. C. Buxton, at Darra Salam, on the coast of Zanzibar.

Messrs. F. Du Cane Godman and Osbert Salvin gave descriptions of new species of Central American butterflies of the family *Erycinidæ*.

Prof. A. H. Garrod read some notes on the visceral anatomy of *Lycaon pictus* and *Nyctereutes procyonides*.

A communication was read from Mr. Andrew Anderson, containing the description of a new Indian *Prinia*, obtained in the Bagesur Valley, North-Western Himalayahs, which he proposed to name *Prinia poliocephala*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 6, 1878.—H. W. BATES, F.L.S., F.Z.S., President, in the chair.

The President nominated Prof. J. O. Westwood, Mr. J. W. Douglas and Mr. Frederick Smith as Vice-Presidents.

Donations to the Library were announced, and thanks voted to the donors.

Mr. Richard S. Standen, of Holmwood Lodge, Surbiton, and Mr. T. W. Wonfor, of 38, Buckingham Place, Brighton, were ballotted for and elected Members.

Mr. Jenner Weir exhibited three specimens of an *Atypus* taken on a bank near Lewes; they were stated to erect a pile of small pieces of chalk in front of their burrows. Mr. Weir also exhibited a remarkable spider from Madagascar, and a small living spider (*Philodromus*), marked and coloured in imitation of lichen, which he had beaten out of trees in the New Forest.

Sir Sidney Saunders stated that the *Atypus* was *A. Sulzeri*, Koch.

Mr. McLachlan exhibited a small collection of dragon-flies of the genus *Euthore*, in illustration of a paper entitled "*Calopterygina* collected by Mr. Buckley in Ecuador and Bolivia." The collection contained a fine series of both sexes of a new species, *Euthore mirabilis*.

Mr. Meldola exhibited a remarkable specimen of *Leucania conigera* taken at Willesden. The colour and markings of the fore wings were reproduced on the lower half of the left hind wing.

Mr. Meldola then read some extracts from a letter from Dr. Fritz Müller to Mr. Charles Darwin, dated from Santa Caterina, Brazil, 27th November, 1877.

The Secretary called the attention of the members to the approaching International Entomological Exhibition to be held at the Royal Westminster Aquarium in March. He also exhibited, on behalf of Capt. Elwes (who was present as a visitor), a series of coloured illustrations of butterflies, printed from nature by a new process invented by Dr. Sériziat, of Collioure (Pyrénées Orientales), France. The inventor states that the "colouring matter is fixed by means of a special adhesive and a press; the bodies are painted in water-colours after nature."

Mr. G. C. Champion exhibited twelve species of the genus *Cetonia*, taken by Mr. J. J. Walker, of H.M.S. 'Swiftsure,' at Besika Bay, Salonica, Piræus, and other Mediterranean localities. He also exhibited a specimen of *Anthicus bimaculatus*, a rare British beetle, taken near New Brighton by Mr. J. T. Harris, of Burton-on-Trent.

Mr. J. W. May exhibited a specimen of *Carabus intricatus* taken at Fulham.

Mr. H. Goss called attention to the occurrence of sexual dimorphism in *Erebia Medea*, and exhibited specimens of both forms of the female. He stated that he had obtained specimens of both forms nearly every year for the last sixteen years from Silverdale, Lancashire, and that one form was quite as common as the other. The principal difference between the two forms consisted in the colouring of the discal band. In one form, which Mr. Goss believed to be the typical form, the discal band was bluish ash-

colour, and in the second or diverging form it was ochreous-brown, or in some specimens whitish ochreous.

Sir John Lubbock read a paper "On the Colouring of British Caterpillars." Starting from the principles laid down by Darwin, Wallace, and others, that dull-coloured, green, and smooth-skinned caterpillars are eaten by birds, &c., while spiny, hairy, and brightly-coloured species are rejected, the author proceeded to show by a statistical method of tabulation that no hairy caterpillars are green, while, on the other hand, a large majority of black and brightly-coloured caterpillars are hairy.

Mr. Jenner Weir expressed his warm approval of the method by which Sir John Lubbock had treated the subject, and remarked that the results obtained forcibly illustrated the antagonism between green coloration and hairy protection. He further stated that during the past summer he had seen the larvæ of *Euchelia Jacobea* in great profusion on *Senecio*, which plant had been completely stripped of its leaves over a large area of the New Forest. The great abundance of this caterpillar he regarded as a natural experiment on a large scale illustrating the truth of the doctrine advocated.

Mr. J. W. Douglas asked whether the bright colours of the caterpillars actually frightened away birds. He remarked that it was well known that the Shrikes impaled brightly-coloured and hairy insects, such as bees.

Sir John Lubbock replied that the bright coloration or hairy covering of a caterpillar acted simply as a warning that the species was inedible. It was clearly an advantage to a distasteful species to be recognized as such before being pecked at by a bird, and not after being seized, in which case the larva, although perhaps not killed at the time, would in all probability ultimately die of the wounds inflicted. Thus by the action of Natural Selection had bright colours and hairs become associated with distasteful qualities.

Mr. M'Lachlan stated that in 1865 (Trans. Ent. Soc., ser. 3, vol. ii.) he had called attention to the fact that some flower-frequenting caterpillars were of the same colours as the flowers on which they fed. He remarked that this was especially the case with the genus *Eupithecia*. Mr. M'Lachlan also called attention to the fact that the larvæ of many *Sphingidæ*, such as *Acherontia Atropos* were known to present two distinct forms or coloured varieties.

Mr. Butler remarked that he could fully endorse Sir John Lubbock's view of the function of the oblique stripes on the sides of *Sphinx* larvæ—that these markings were intended to represent the shadow-lines cast by leaves. He mentioned that he had recently had an opportunity of observing *Sphinx ligustri* under conditions most favourable to this deception. Mr. Butler further remarked that many of the exotic larvæ belonging to the genera *Sphinx* and *Smerinthus* were dimorphic. With reference to colour

being influenced by food-plant, he stated that he had observed this fact in connection with species of *Mamestra*.

Sir John Lubbock stated, with regard to dimorphic larvæ, that Weismann had shown that in such cases one form generally retained the characters of the young larva, while the other form diverged from it at a certain stage of growth. The dark-coloured varieties generally existed in those species which fed on low-growing plants, under which conditions the dark colour served as a protection to the caterpillar when hiding by day.

Mr. H. Goss said that he had long been familiar with two forms of the larva of *Chærocampa elenor*, and that the green and brown varieties were about equally common, the former colour not being in any way confined to young larvæ.

Mr. J. P. Mansel Weale remarked that in South Africa the ordinary form of larva of *Acherontia Atropos* feeds generally upon *Solanaceæ*, while the dark form, which is rarer, he had found only on species of *Lantana*. The larva of *Chærocampa capensis* feeds on the wild vine, and is green, shaded with oblique stripes of pale violet; it has two eye-like spots on the thoracic segment, but they are very small, and would in this case hardly be serviceable to the insect in frightening away birds; the general coloration of the caterpillar is probably protective. Another *Chærocampa* larva feeding on the wild vine is dark-coloured, but with very large eye-like spots, which give it a grotesque appearance. Mrs. M. E. Barber, in a paper read before the Linnean Society, mentioned the larva of a species of *Chærocampa* which feeds on *Convolvulaceæ*, and which in its younger stage is green, but becomes dark coloured prior to burrowing, at which period it may be seen wandering about the ground. The species is extremely abundant. The larva of *Antheræa Tyrreæ* is so abundant in some seasons that the thorn-trees (*Acacia horrida*) are stripped of their foliage over miles of area. The caterpillar is conspicuously marked with black, white and yellow; when touched it jerks its head backwards and ejects a quantity of a nauseous green fluid. Mr. Weale stated that he had never seen it attacked by birds, although it is often infested with ichneumons. The moth—to judge by the number of wounded specimens—is attacked largely by some night-flying animal, probably bats. Many of the larvæ of *Sphingidæ* when seized have a habit of doubling up the body and then jumping a considerable distance with a spring-like action. This is especially the case with species having eye-like markings, and it is probable that if attacked by birds in a hesitating manner, such species might effect their escape amid the grass or foliage.

Mr. Meldola stated that, in the December number of 'Kosmos,' Fritz Müller had recorded a number of most interesting observations bearing upon the subject of the coloration of caterpillars.

The following papers were communicated by Mr. C. O. Waterhouse:—
"Description of a new Dragon-fly (*Gynacantha*) from Borneo." "Description

of a new Species of *Chernitidæ* (*Pseudoscorpionidæ*) from Spain." "On the different forms occurring in the Coleopterous Family *Lycidæ*, with Descriptions of new Genera and Species."

Part IV. of the 'Transactions' for 1877 was on the table.

March 6, 1878.—H. W. BATES, F.L.S., F.Z.S., President, in the chair.

Donations to the Library were announced, and thanks voted to the donors.

Mr. John Woodgate, of Richmond Road, New Barnet, Herts, was ballotted for and elected a Member.

Mr. F. Moore exhibited, at the request of Sir W. H. Gregory, late Governor of Ceylon, a large series of beautifully executed drawings, by native artists, of the transformations of the Lepidoptera of that island. These drawings were made under the supervision of Dr. Thwaites, and represent the life-history of many species hitherto unknown. Mr. Moore expressed a hope that the Government of Ceylon would accede to the proposition of having them published.

Mr. M'Lachlan exhibited four parts—relating to Entomology—of the great Russian work, Fedtschenko's 'Travels in Turkestan;' they consisted of two parts on *Hymenoptera*, &c., one on *Coleoptera*, and one on *Arachnida*.

The President called attention to the excellence of some of the plates, drawn, engraved, and coloured in Russia.

Mr. H. Goss exhibited a small collection of fossil insects obtained by Mr. J. S. Gardner, F.G.S., from the Bournemouth Leaf-beds (Middle Eocene). The collection comprised numerous elytra of *Coleoptera*, chiefly *Curculionidæ* and *Buprestidæ*, also wings of an *Æschna* and other *Neuroptera*, &c.

Mr. J. P. Mansel Weale read some "Notes on South African Insects."

Mr. Edward Saunders contributed a paper entitled "Remarks on the Hairs of our British *Hymenoptera*."

Mr. A. G. Butler read a paper "On the Natural Affinities of the Lepidopterous Family *Ægeriidæ*," in which he showed that the structural characters of these insects presented no resemblance to the *Sphingidæ*, with which they had hitherto been allied; but that they were more related, on the one hand, to the *Pyræles*, and on the other to the *Gelechiidæ*.

Mr. Peter Cameron communicated a paper "On some new Genera and Species of *Tenthredinidæ*."

The Secretary read a paper by Mr. A. H. Swinton entitled "The Biology of *Insecta*, as determined by the Emotions." The author has collected a large number of observations showing the various means by which insects express fear, love, rivalry, &c. The present paper deals chiefly with cases of simple muscular contractions and secretions.—R. MELDOLA, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Shooting, Yachting and Sea-fishing Trips at Home and on the Continent. By "WILDFOWLER," "SNAPSHOT." 2 vols. 8vo. Chapman and Hall. 1877.

A BOOK on wildfowl-shooting comes to hand opportunely in the month of January,* and if the weather is not sufficiently favourable to hold out much hope of sport, there is some consolation to be found in looking forward to a change for the better, and in reading, over a comfortable fire, the adventures and advice of "Wildfowler."

Those who have already made acquaintance with his two former volumes, which were published a year or more ago, will be prepared for much that appears in these, and the reader who is fond of marsh and coast shooting, with an occasional turn at sea-fishing, will find a good deal to amuse him in these reminiscences of an enthusiastic sportsman.

It may be thought by some that there is rather too much sameness in the account which the author gives of his varied expeditions, and that one good book on the subject (as the "first series" undoubtedly was) is better than two. On the other hand, the author does not go over the same ground, or water, but "changes the venue" both at home and abroad, and many who are as enthusiastic as himself will doubtless be disposed to think that they cannot have too much of a good thing.

Without actually reproducing some of his sketches, for which we regret that we have not space at our disposal, we can scarcely do the author justice; but we may remark that although his heart is evidently in the lonely snipe-marsh, or the saltings and sand-hills by the sea (where the variety of birds to be met with at certain seasons, the uncertainty of what will get up next, and the rapid, twisting, snipe-like flight of these denizens of the marsh, combine to render this kind of rough shooting peculiarly attractive), he has by no means neglected the claims which every species of winged and four-footed game possesses in the eyes of sportsmen.

The subject of Grouse-shooting, Partridge-driving, or Snipe-shooting in Ireland, is now somewhat "hackneyed," and there is

* This notice was written in January last, and has stood over ever since for want of space.—ED.

an unavoidable sameness in most descriptions of the 12th August or the 1st September. But this is made amends for by the account which is furnished of the sport to be obtained in the marshes or at the mouths of tidal rivers, and various shooting excursions in different parts of the Continent.

The chapter on catching Foxes in France for the English market (vol. ii., p. 49) will have an interest for those who prefer hunting to shooting, while the concluding chapters in the second volume on sea-fishing will furnish amusement to all lovers of the long-line.

Although the author is a keen sportsman, and evidently a good shot, we infer from his book that he is no naturalist, for we miss the accuracy that would characterise a close observer of Nature in many passages wherein he fails to discriminate the species of birds shot by him, while he makes no note of their peculiarities of habit, call or flight. Some attention to these points we think would have heightened the value of the book in the eyes of many readers.

We should have been glad also to have seen a list of the provincial names of birds, with the localities in which the same are in use, and which "Wildfowler," from his many opportunities, might well have furnished. Visitors to the coast, even naturalists of some experience, are now and then puzzled to identify a bird from its local name without actual examination of a specimen; and a curious collection of such names might be made from the vocabularies of local fishermen and professional gunners. We throw out this hint for the consideration of some of our readers.

Field Paths and Green Lanes: being Country Walks, chiefly in Surrey and Sussex. By LOUIS J. JENNINGS. Illustrated with Sketches by J. W. WHYMPER. London: John Murray. 1877. 293 pp.

THE author of this entertaining work well observes, "To anyone who has eyes, there is much to see in this small but infinitely varied England, so much that, as Emerson says, to see it well 'needs a hundred years.'" He has done, therefore, acceptable service, which will be recognized and acknowledged by many a

denizen of the modern Babylon who finds solace and mental refreshment in occasional pedestrian outings, in putting into so graphic and agreeable a shape the results of his own wanderings in the two southern counties of Britain which possess not merely the charms of "field paths and green lanes," in well nigh endless variety, but in addition archæological and ecclesiastical objects as infinite in their interest. True it is, much of the matter to be found in this volume is to be consulted in Murray's Handbooks to Surrey and Sussex, but the special charm of Mr. Jennings' notes lies in the fact that as he "invariably followed a green lane or a field-path, wherever one could be found," he has endeavoured to furnish directions enabling others to follow it also; "for," as he justly adds, "very seldom is it marked upon the maps."

Like Walter White, in his analogous 'Walks,' our author appears to have found additional pleasure in making friends with the country people and tramps with whom he came in contact; his chat with such wayfarers imparts much liveliness to his pages, and he even urges that advantage attends the unaccompanied tourist, on the ground that "by proper management you may get the country folks whom you meet to talk to you, and from them pick up many a quaint saying or odd scrap of information." On this point opinions may differ, but at least in Mr. Jennings' case the result has been to impart to the reader many curious provincial colloquialisms.

Of matter more immediately calculated to claim the attention of 'The Zoologist' there is not much to notice. Observant of his surroundings as Mr. Jennings undoubtedly is, and having at all times a keen eye for Nature's beauties as exemplified in wild scenery, or for man's handiwork as developed in quaint buildings, he nevertheless records but few facts connected with Natural History. At Etchingham (p. 45) an old man, telling the author of the origin of a rookery in that village, thus delivered himself:—"They Rooks as you see on bårson's plåce only coom a few year agoo. About fi' year back, ten or a dozen coom, and the next year about vårty, and now you see as there be a hundreds of 'em. Queer birds, they be—sometimes coom all of a sudden, and then go away again same way."

Again (p. 97):—

"In the one street of Bramber I noticed a signboard pointing 'To the Museum.' What sort of a Museum could it be? It turned out to be a

very curious place indeed, prepared and fitted up by one man, whose name is James Potter, a self-trained naturalist. Numerous animals, birds, and insects, all caught and stuffed by Potter himself, and made up into striking or grotesque groups, were round the room. There is a 'kittens' croquet party,' a 'squirrels' carouse,' a cricket match played by guinea-pigs, and other scenes, wonderfully life like, and all sweet and clean and pleasant to look upon, which is quite a new feature in connection with stuffed animals. 'I suppose,' said I, 'many of these creatures are only made up?' 'Oh, no, sir,' said Potter, 'they are all real. I was obliged to have them alive, or I could not have given them the *expression*.' There were some capital Herons and Kingfishers, caught close by."

A large sand-bank about two miles from Dorking, just below the hill leading from Westgate, will be found "full of Martins' nests—many colonies of Martins may be seen in this part of the country, but this is one of the largest and most conveniently placed for purposes of observation" (p. 158).

Although Mr. Jennings has limited his expeditions chiefly to the two home counties included in the title of his book, he has nevertheless favoured his readers with notes of peregrinations in the adjacent county of Kent and down the Wye from Ross to Chepstow. It is in Surrey and Sussex, however, that the author's strength will principally be found to lie, and of what character are the scenery and general aspect of a region the nearest, and in the main most accessible from, the densely populated metropolis is best told in his own words:—

"The road throughout this walk leads on through woodland and common, by paths bordered with fir trees, or passing over hills beneath which a great part of the Wealds of Surrey and Sussex lie extended before the traveller. By far the larger proportion of the land through which he must pass is uncultivated. Considering the small size of the county of Surrey, the extent of it which lies a mere wilderness in these busy days is simply amazing. The whole county is but twenty-seven miles in length, and not more than forty in breadth, yet it contains almost every variety of scenery, scarcely one mile is like another, and often the whole character of the country undergoes an utter change within the space of half-a-dozen miles. Where, out of Scotland, can be found such moors and heaths as those between Thursley and Hindhead, or even between Albury and Ewhurst? Many of the commons or downs are familiar to excursionists, but the heaths in the more distant and neglected parts of the county are little visited.

The cottagers to be met with here and there will tell you that they scarcely ever see a stranger from one year's end to another." (P. 248.)

The work is illustrated with some woodcuts from capital sketches by Mr. J. W. Whympster, deserving of more than a mere passing notice. We cordially commend Mr. Jennings' pleasant book to all lovers of Nature, and in this would include those who from physical infirmity or lack of suitable opportunity are debarred from using their eyes, ears and legs as he has done, with so much profit to himself and advantage to his readers.

Notes of Observations of Injurious Insects. Report, 1877. 8vo, 19 pp. London: T. P. Newman. 1878.

In the early part of last year we received a small seven-page pamphlet entitled 'Notes for Observations of Injurious Insects.' In the prefatory remarks assistance was asked from both agriculturists and entomologists in order to obtain information on a few selected species generally injurious to farm or garden crops. The instructions given were as follows:—

"The points chiefly to be noted are the *presence of surroundings*, such as plants, or shelter, suitable for the food or protection of the noxious insects; *agricultural conditions*, such as the drainage, the nature of the soil, and manures, and that of the preceding crop on the ground, its degree of cleanness and that of the neighbouring fields, and also the *state of the weather*.

"The observations on the insects under the head of "general remarks" should give the *date* of their appearance as larvæ; *numbers*, comparatively, to previous years; and also date, and quantity of appearance, and date of disappearance in the perfect state, with *amount of injury* to crop."

These observations were to be returned on a ruled form which came with the pamphlet.

On receiving this, we must confess, we looked it over and thought that although the object aimed at was undoubtedly a good one, it would probably meet with little attention, not only from lack of interest and lack of willing observers, but also from the fact that the majority of farmers and gardeners are almost entirely unacquainted with Entomology. Our misgivings, however, proved

ill founded. We have just received the first Report, which extends to nineteen pages, and clearly shows that the venture has by no means been unsuccessful. Miss E. A. Ormerod, the author, herself tells us "the request has been responded to far more cordially than could have been expected."

It is said that Economic Entomology is to a certain extent a useless work in this country, from the immunity we enjoy from the attacks of noxious or hurtful insects. Certainly in this respect we are not afflicted to the same extent as many other countries. We have not the "hoppers" or "tater-bugs" of our American friends, nor is a great industry threatened, as is vine culture to our continental neighbours through the ravages of the *Phylloxera*. But we know from experience and hearsay that great damage is wrought to many of our products by the effect of insect "blights." The removal or abatement of these losses seems to be the aim of these 'Notes,' and we can only wish that, as the work seems to have been so well taken up by competent observers in such varied localities, it may eventually lead to good results. To show its practical bearings, we cannot do better than quote the Report itself, the second paragraph of which runs as follows:—

"Whether much or little, those who will give the benefit of their knowledge in diminishing the great yearly loss from insect waste are doing good service to the country; and this first year's return shows how much may be gained by continuing the observations for the time which would be requisite to form fairly complete notes of treatment found successful generally, with the modifications required by each year's peculiar weather, or by soils and climates varying as widely as the range from Banff to South Devon."

The details of the Report need not be specified here further than to say that information has been received respecting fifteen of the sixteen insects specially recommended to be observed. The species unobserved is the Corn Sawfly (*Cephus pygmæus*). Of those mentioned the first eight are the most important, *viz.*:—The Turnip Fly (which, by the bye, seems to be a little beetle), Onion Fly, Carrot Fly, Cabbage Moth, Cabbage Butterfly, Wireworm, Celery or Parsnip Fly, and Turnip Sawfly. The remaining eight appear to be a somewhat miscellaneous collection, but in it are contained two notable species—(1) the Wheat Midge or Red Maggot (*Cecidomyia tritici*), that very destructive little gnat

which occurs in the wheat-ear just as the kernel is forming, and has to answer for the destruction of a large quantity of the "staff of life;" (2) the Clouded Yellow Butterfly (*Colias Edusa*), which we were originally surprised to see included, and wondered why it should be introduced. Probably the author had some prophetic prescience, as its appearance everywhere in unprecedented numbers has been the great entomological feature of the year.

Twelve of these specially noted insects are fully illustrated by clearly-drawn figures. After these notes there are a few general remarks on the Asparagus Beetle—for the destruction of which a successful treatment is given—and two or three other insects, with instructions as to the form of procedure, closing with an apology, which certainly seems unnecessary. It is signed "E. A. Ormerod, Dunster Lodge, near Isleworth, London."

We understand that this pamphlet is issued gratuitously, and may be obtained from Mr. Newman, 32, Botolph Lane, London; its object, therefore, is the more commendable, as few persons can have any difficulty in recording their observations when such facility and information is so freely afforded them.

The Scottish Naturalist: a Quarterly Magazine of Natural History. Edited by F. BUCHANAN WHITE, M.D., F.L.S.
Edinburgh and London: Blackwood & Sons.

WE are glad to observe, by the appearance of the twenty-ninth number of this periodical, that the study of Natural History north of the Tweed continues to flourish. Seven years ago the members of the Perthshire Society of Natural Science inaugurated this journal as a medium for the publication of their Transactions, but owing to the favour with which it was received by naturalists in other parts of the country, it soon ceased to be the representative journal of one Society only, and has now, we are glad to see, a considerably extended circulation.

The current number commences with a pleasantly written article by the Editor on "Glen Tilt: its Fauna and Flora," followed by a continuation of Sir Thomas Moncrieffe's account of the *Lepidoptera* of Moncrieffe Hill. Dr. Stirton continues a paper "On certain Lichens belonging to the Genus *Parmelia*," and Dr. Lauder Lindsay has an article "On the Gold-Fields and

Gold-Diggings of Crawford-Lindsay," in which he embodies the results of his own enquiries concerning the modern history of gold-finding in the Crawford-Lindsay hill district, which extends into Dumfriesshire, though the most important part of it, with its former capital and castle, is in Lanarkshire. Professor Traill's communication on "Scottish Galls," dealing as it does with the attacks of insects on plants, possesses as much interest for the zoologist as for the botanist.

We see by an "Occasional Note" that Mr. J. A. Harvie Brown, of Dunipace House, Larbert, N.B., is engaged in collecting statistics on the increase and spread of the Capercaillie in Scotland since its restoration at Taymouth in 1836, and that anyone who is interested in the subject and willing to impart any information may receive, on application to Mr. Harvie Brown, a printed form showing in a series of questions the points upon which he specially desires information. Perhaps some of our readers may be able to assist him.

The Midland Naturalist: the Journal of the Associated Natural History, Philosophical and Archæological Societies and Field Clubs of the Midland Counties. Edited by E. W. BADGER and W. J. HARRISON, F.G.S. London: Hardwicke & Bogue. Birmingham: Cornish Brothers.

WE have received the first three numbers of a new journal bearing the above title, and which is intended to become the medium for publishing the Transactions of some sixteen or seventeen different Natural History Societies in the Midland Counties. The step is no doubt a judicious one, and will extend the usefulness of local Societies by affording facilities for inter-communication through an authorized and regularly published Magazine, which shall record the work done by each Society, announce forthcoming meetings, assist the exchange of specimens, and by providing opportunities for personal intercourse amongst the members at meetings to be held from time to time in various places of interest, promote and encourage the study of Natural History. We wish the new journal all success.

THE ZOOLOGIST.

THIRD SERIES.

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MAY, 1878.

[No. 17.]

ORNITHOLOGICAL NOTES FROM THE FÆROE ISLANDS.

COMMUNICATED BY CAPT. H. W. FEILDEN.

THE following notes are based on information forwarded by my valued friend and correspondent, Herr H. C. Müller, of Thorshavn, and relate to occurrences subsequent to 1872, in which year I visited the Færoese Group, and recorded in the pages of 'The Zoologist' my ornithological experiences whilst there.*

Falco æsalon.—Müller mentions finding a nest of the Merlin on the 30th June, 1875, containing four young ones. On the 6th July one of the young was nearly able to fly well, and on being disturbed the three others left the nest. The Merlin is resident throughout the year in the Færoes. I have compared specimens obtained there with a series from other parts of the world, and there does not appear to be any peculiar shade of colouring in the plumage of the birds said to be resident in those islands.

Turdus pilaris.—The Fieldfare is not by any means a regular winter visitor; but on the 6th November, 1874, a flock of thirty was seen in the neighbourhood of Thorshavn.

Turdus iliacus.—Redwings generally arrive in the Færoe Islands in April and May on their way north, and again in September during the migration south. On the 11th April, 1874, a large flock numbering some forty individuals appeared in a

* See 'The Zoologist,' 1872, pp. 3210, 3245, and 3277.

garden near Thorshavn, belonging to Mr. Hansen, where they remained until the 26th of the same month.

Caprimulgus europæus.—The Nightjar is a rare and uncertain straggler to the Færoes. Müller informs me of an example being captured on the 28th June, 1874. Three instances of its occurrence have been previously recorded.

Columba palumbus.—A single Ring Dove was obtained on the 23rd May, 1874.

Turtur auritus.—The Turtle Dove is a very uncommon straggler to the Færoes. A single example was observed flying about the neighbourhood of Thorshavn during the latter part of June, 1873.

Vanellus cristatus.—The Lapwing has hitherto been recorded only as a spring and winter visitant; but on the 2nd July, 1875, a pair of these birds hatched out four young ones in the neighbourhood of Midvaag. Müller remarks that this is the first known instance of this species breeding in the Færoe Islands.

Scolopax rusticola.—Previously only one occurrence of the Woodcock had been recorded; but on the 11th and 16th January, 1873, single birds of this species were seen on the hill between Kirkeboe and Thorshavn.

Pagophila eburnea.—In January, 1873, an adult Ivory Gull was procured on the island of Nalsee, and another from Sandoe in February of the same year.

Larus glaucus.—This species was very abundant in the Færoes during December, 1876.

Larus leucopterus.—A single example of the Iceland Gull was seen by Müller in the winter of 1876.

Stercorarius pomatorhinus.—From August to October, 1873, as well as in 1874, the Pomatorhine Skua was numerous.

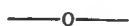
Stercorarius parasiticus.—Buffon's Skua is recorded by Müller as having been numerous between August and October, 1873. This species has not been found breeding in the Færoe Islands.

Fratercula arctica.—In 1874 the number of Puffins killed on the island of Vaagoe amounted to 70,000, and on the island of Myggenæs to 80,000 during the same season.

Puffinus griseus.—Müller informed me of the capture of one of these birds, a female, on the 4th August, 1873, which I recorded in 'The Zoologist' for 1875 (p. 4495), under the name *Puffinus fuliginosus*, on his authority. On the 26th October, 1876, a

second example, a male, was captured and brought to him. This specimen is now in the Museum at Copenhagen.

Puffinus major.—Müller seems to think that this species is becoming more common around the Færoe Islands than formerly. An example was procured on the 12th June, 1875, another on the 7th July, and a third on the 4th August, 1877, all three being females.



CONDOR HUNTING ON THE SIERRAS.

BY E. W. WHITE, F.Z.S.*

DURING a late three-months' residence on these life-giving hills, my mind was made up to organize a naturalist's expedition into the region of the king of the skies. Pitching my head-quarters at Cosquin, on the first range, distant N.W. from Cordova thirty-five miles, and with the kind aid of Don Enrique Cooke, of that place, arrangements were soon completed for the purpose, and we accordingly started from his house on the morning of the 14th January, 1878, at about 8 A.M. Our party consisted of two native gentlemen and myself, mounted on horses, with two peons mounted on mules carrying, besides their riders, bedding and other necessaries. A good sportsman would have despised our arms, indeed, but not the panniers, which were loaded with the good things of this life. My rifle being unserviceable, on account of damp ammunition, another gentleman lent me his, but unfortunately could produce only three cartridges, the remaining shooting-iron being a double-barrelled fowling-piece, besides a small revolver stuck in my belt. Well might we look forward with some anxiety to the result of our attack, with such slender means at our disposal; but having heard of the skill of the native with the lasso, we determined to proceed, and the sequel will show how that formidable weapon is more than a match for this enormous and powerful vulture.

Our route lay through the village of Cosquin, across the river, and proceeding for a league on the high road to San Juan, we then branched off eastwards. Here we penetrated the woods of

* From 'The Standard and River Plate News,' February 28th and March 1st, 1878. Published at Buenos Ayres.

Tala, Mimosa, &c., that cover the gentle slopes rising one above another to the foot of the mountains, and, following the cattle-tracks, had great difficulty in preserving our skins and clothes whole from the almost impassable barrier of formidable thorns. Of course, Indian-file was the order of the day for another league, which brought us to the foot of the mountains,—a bold and towering range, flanked by a rushing mountain torrent, which we had to cross, and thence, *excelsior*, through dense forests of very fine growth, the trees averaging sixty to eighty feet, with a dense brushwood of sweetly-scented medicinal herbs, with which the Sierras abound, and which, crushed by the horses' hoofs, presented us with a real mountain bouquet.

Hard work for the horses! for besides having to cross mountain streams every five minutes, granitic slippery boulders of two or three feet high everywhere blocked our path and had to be surmounted, the rider generally clinging to the horse's neck. A sudden turn in the path brought us to an open space from which the view was exquisite, hill and dale melting into that airy purple gauze which separates the physical from the ideal. No sound to break the solemn stillness, save the distant roar of some mountain torrent or the plaintive cooing of some solitary dove. Here both Nature and our own bodily wants invited us to rest; and what fitter place for horse or man? Luxuriant herbage for the former, for the latter the sombre shade of the towering Quebracho, Algarroba, Tala, Coco, Espinillo, Tintitaco, and the Chañà, the latter of which produces a fruit much resembling the date in flavour. A bubbling stream at our feet, a back-ground of picturesque boulders, many of which, half-hidden in the dense foliage, weighed hundreds of tons, and beds of moss inviting to the midday *siesta*. Lazily reclining, "*sub tegmine fagi*," and watching those richly ornamented flying-flowers chasing one another through space, grandeur, solitariness and thoughts of home and distant friends flit through the mind. But time is inexorable; we resume our march, and, leaving the woods behind, emerge upon ground covered with long coarse grass springing from between the stones. The absence of animal life is characteristic of this elevated region; for with the exception of here and there an Eagle perched on a giddy rocky eminence, or a noble Condor circling high, like a moving speck, in the lofty air, nothing relieves the monotony of the noiseless scene; and yet how the

earth sparkles, as though sown with brilliants, for flashing in every direction lies the inexhaustible mica.

One summit is soon climbed, and then at our feet lay the valley of Cosquin, about nine miles by two, the Rio Primero, like a silver thread, winding through it, the magnificence of the panorama recompensing us for the difficulties of the ascent. On the opposite side of the valley a succession of well-wooded hills extends one above another to the foot of the second range of the Sierras, 5000 feet high, and distant about twelve miles from the first. Our object was to reach the interior of the Sierras, which at this point average from five to six miles in breadth, and rise to an elevation of 3500 feet. Minerals are scarce in this part, although one or two old mines were passed, yielding carbonate of copper and of rich quality. Guanacos exist, but are scarce, and wild hogs, too, in the inaccessible parts of the woods below. Mounting still upwards, we reached the splendid pasture lands of the summits, presenting gentle, sloping terraces with long valleys threading in and out, and charming glens branching off; rich grass is abundant, but no tree nor shrub even meets our view: the cattle begin to be more numerous, and presently we arrive at the stone-wall boundaries which mark the limits of each *estancia*. So light and clear is the air that it imparts a positive sensation of delight to breathe it, and fatigue is forgotten. We dismounted at an *estancia* house and were received with the usual native politeness, and, *maté* being handed round, sent forward the peons to give notice of our arrival to the *estanciero* on whose property the hunt was to take place. This gentleman, whose name is Torres, welcomed our arrival with the utmost hospitality, although the dilatory peons had not yet put in an appearance to warn him of our approach. The *estancia* house—a very picturesque old building, faced by a hoary trained vine—has a *patio* in front, bounded by a trickling rivulet, shaded by patriarchal willows. An orchard of six squares, filled with various thriving fruit trees, stands adjoining. A few barns and other outbuildings, *alfalfa*, and wheat-fields, complete the exterior picture. No long time elapsed ere we were seated at a breakfast table, not certainly groaning, but literally creaking, with abundant fare. It is scarcely necessary to remark that we did justice to the good things provided, for a six-hours' ride over a very rough country gave us the customary appetite of hunters. The usual *siesta* followed, and then a consultation as to the

morrow. Our host kindly offered to slaughter an old mare as bait, and having decided to kill the animal that night, we proceeded to rub over the carcase the twenty pounds of salt brought with us for that purpose. The object of this is to quicken the digestion of the Condor, so that it may not be able to disgorge its meal, which it invariably does when disturbed at feeding-time—no doubt to diminish its specific gravity and give it a chance of rising more speedily from the ground. Having made all necessary arrangements for the anticipated morrow, we retired to the shady orchard, regaling ourselves on the ripe fruit, and about dusk re-entered the house for a dance until 10 P. M., when a late dinner was served, the *piece de résistance* of which was roast kid. Amongst the dishes common on the Sierras may be mentioned stewed owls, parrots, wheat soup, &c., all of which, if not to taste of the epicure, form welcome additions to the *carte* of the traveller. Thoroughly tired, and yet with fevered pulse, we now sought the downy pillow; two moments sufficed to woo the fickle god, who prolonged our sleep till cockcrow. Springing from our couches at this signal, we despatched a peon to reconnoitre, but no condors were yet visible; in fact, this gluttonous vulture, like its human congeners, is a very late riser.

After the despatch of two or three other messengers, we had the satisfaction of learning, about 9 A. M., that the Condors were arriving. In fact, we had no need of messengers; these *Sarcophagi* announced themselves from every quarter of the horizon, looming up in successive lines. And now all was hurry and confusion, saddling, coiling lassos, &c., for when once the Condors make their appearance very little grace is allowed, and less than half an hour suffices to leave only the bones of an ox or horse. In about ten minutes we were ready to start, our party consisting of Don Palemon Carranza, Don Enrique Cooke and myself, with four peons all well mounted and armed with lassos and bolas, but badly off for fire-arms. The field of battle was not far distant and was well-chosen, the bait having been placed on the gentle declivity of a grassy hill free from stones, whose summit shielded our approach from view. Reaching the brow, we put spurs to our horses and and charged right down upon the Condors. Imagine the scene of confusion that then ensued at the banquet table, when more than fifty magnificent Condors flapped their huge wings and endeavoured to rise. I had only just time to throw myself off my horse, when

the Condors flew past, and letting fly with my three solitary bullets, without taking steady aim, was mortified to find that their wing-feathers alone were struck, which did not stop their progress. As the birds flew over us, there was a perfect hail of meat around us, disgorged by them to accelerate their flight.

Suddenly a loud shout of "Viva!" was heard, and looking round I perceived a fine Condor struggling on the ground, lassoed by one of the peons. One other was lassoed by our host, but it managed to slip the knot, and so escaped. Don Palemon had no better luck with his fowling-piece than I with my rifle, firing two shots without effect, although a small boy standing by remarked that one Condor was hit in the eye, and certainly a drop of something—most likely a Condor's parting tear—fell at Don Palemon's feet.

Our capture was a male bird of medium size, but in very good condition, measuring over ten feet across the wings. Some of the Condors having settled on a neighbouring eminence, one or two of us gave chase, Don Enrique firing two unsuccessful shots, and I—in very vexation at not having a better weapon—amused the game by using my revolver. All the Condors had now taken to flight, circling high above our heads, of course awaiting our departure to continue their meal, and as all chance of further sport on that day had vanished, we wisely returned homewards to dinner.

Time did not permit us to extend the programme, as intended, to the sacking of Condors' nests—a difficult and dangerous feat. About a league distant stands a precipice, on a ledge of which, 200 feet deep, the Condors love to build, and to reach this a rope is suspended dangling in the air, and if the old birds return during the burglarious attempt, woe to the daring hunter! The universal testimony is that the Condor lays but one egg.

I managed to construct a leather hood for the captured Condor, and, having tied his legs and wings, deposited him safely in one of the panniers; and then, all being ready, we bade adieu to the kind family where we had been so hospitably entertained for two days. Our host serving as guide, our descent was rapid. Passing round the crest of a hill, three Condors were espied, evidently about to attack a calf grazing with a few head of cattle in the hollow beneath us. Now the Condors are notoriously inquisitive, and one of them sailing up to interview

us, got into trouble, for Don Enrique, who was carrying the fowling-piece loaded with swan-shot, jumped off his horse, and brought down the bird with thundering rush at our feet. The other pannier was now loaded, and off we trudged to another brow, when our host left us, giving us special directions as to the road to be followed.

Condor-hunters are especially welcomed to the Sierras, as the birds commit great havoc amongst the herds. They will attack a calf four or five months old, and in a few minutes nothing is left of it but the skeleton. Waiting till the mother is at some distance, they swoop down and strike the animal to the ground, immediately ripping out its tongue that it may give no signal of alarm.

Our homeward descent was continued without any other adventure save losing one of our companions in the woods. Our whistles were used continually without success for an hour, and then, by sheer accident, he again crossed our path, having been riding in every direction, misled by the notes of a bird, strongly resembling the sound of a whistle.

We made a short halt, for *maté* and a *cigarillo*, at a *rancho*, the people in which, whilst expressing their delight at our successful hunt, wished to know whether we were going to use the Condors as a *remedio*, having no idea of the value or object of Natural History pursuits—in fact, considering a naturalist as a species of quack doctor who collects animals in order to procure wonderful *remedios*. In these Sierras a *remedio* is the usual form for begging. The other evening an old woman at Cosquin begged for a piece of candle as a *remedio*—certainly a perfect cure for darkness.

At sundown we arrived safely at our journey's end, a little fatigued, but thoroughly well pleased with this our first Condor-hunt on the Sierras of Cordoba.

THE LAND AND FRESHWATER MOLLUSCA OF SUSSEX.

BY THE EDITOR.

(Concluded from p. 126.)

II. AQUATIC MOLLUSCA.

BIVALVES (*CONCHIFERA*).

Order LAMELLIBRANCHIATA.*

Fam. SPHÆRIIDÆ.

Sphærium† *corneum*. The Horn-coloured Sphærium.—Generally distributed and common in ponds, ditches and slow streams. The only species of the genus at present identified at Ratham, Chichester (J) and Eastbourne (G).

Sphærium rivicola. The Brook-haunting Sphærium.—Mr. Borrer, writing under date 4th December, 1877, says:—"A brother of mine has to-day shown me some specimens of *Cyclas rivicola*, which he collected from the *rejectamenta* of the floods of the Arun, at Burpham, near Arundel. I never met with it myself, although I should quite have expected it, as the Arun and the Wey are connected by a canal, and the shell is abundant in the Wey, at all events about Guildford." This species is not included in any other of the Sussex lists.

Sphærium lacustre. The Lake-dwelling Sphærium.—This shell may be found in abundance in the Great Pond at Harting, near Petersfield, and in the streams issuing from it.—W. It occurs also in ponds at Cowfold (B), and is included in a list of Mollusca from the vicinity of Brighton (M). Although not mentioned in any other of the Sussex lists, it is probably generally distributed, and has been either overlooked, or perhaps, when encrusted with mud, confounded with some other species.

The Rev. Leonard Jenyns, who has paid much attention to this group of freshwater bivalves, published a monograph of the British species, which will be found in the 'Transactions of the Cambridge Philosophical Society' for 1832, and is full of valuable and interesting information. Some curious details of the habits of *Sphærium lacustre*, communicated by Dr. Lukis, of Guernsey, are

* Having leaf-like gills.

+ By many conchologists the name *Cyclas* is retained for this genus.

given by Mr. Gwyn Jeffreys, in his 'British Conchology' (vol. i., pp. 12—15).

Pisidium amnicum. The River Pea-shell. — Formerly the species of this genus were all classed with *Sphærium*, but, independently of their smaller size, they differ in the shape of their shells, which are not equilateral,—that is, the beak is situated near the shorter end,—and in having but one contractile tube or syphon, instead of two. The name *Pisidium* was bestowed from the gregarious habits of the species, individuals of which may often be found in considerable quantities, scattered about *like peas*. *Pisidium amnicum* is by no means uncommon in rivers and gently running streams, residing wholly at the bottom, and partly buried in the mud. In the parish of Harting it is widely distributed along the water-courses traversing the Down Park and the Nyewood meadows.—W. In the neighbourhood of Lewes, however, Mr. Unwin considers it somewhat rare, although he has found it in the Cut, and in the streams which empty themselves into the Ouse. In the vicinity of Brighton, also, it is not considered common.—M.

Pisidium fontinale. The Stream Pea-shell.—Mr. Gwyn Jeffreys has described four varieties of this species, which have been catalogued by some conchologists as specifically distinct, under the names *Henslowianum*, *pulchellum*, *pallidum* and *cinereum*. Mr. Unwin has entered it in his Lewes list of Mollusca, under the name *Henslowianum*, and remarks that he has only met with two specimens. In the Brighton list it is included as *P. pulchellum* and marked "rare." Mr. Weaver has catalogued it, under the name *cinereum*, as a species inhabiting the streams in the East Harting district. It is reported to occur, also, in the vicinity of Eastbourne:—G.

Pisidium pusillum. The Little Pea-shell.—In ditches in the levels of the Arun and the Adur, and in ponds at Cowfold amongst *Lemna minor*.—B. Occasionally amongst freshwater *Algæ*, with other minute species, in the vicinity of Lewes.—U. Under the name *obtusale*, Mr. Weaver has recorded it as tolerably plentiful in the parish of Harting in a shallow water-course in a meadow known as Pannell's Hole, and Mr. W. Jeffery reports that it is found at Burton, near Petworth. It is recorded with doubt as occurring at Eastbourne (G), and noted as rare in the neighbourhood of Brighton (M).

Pisidium nitidum. The Glossy Pea-shell.—In ditches at Henfield, Lewes and Eastbourne.—B.

Fam. UNIONIDÆ.

Unio pictorum. The Painter's Mussel.—Generally distributed in ponds and streams. Common in the Cut near Lewes, and in the Ouse occasionally; varying very much in appearance, specimens in the Ouse being much darker, and having an extraneous coat, evidently from some matter with which the water is impregnated.—U. Mr. W. Jeffery reports its occurrence at Burton, near Petworth. It is somewhat singular that none of the Sussex lists include the allied species, *Unio tumidus*, which is very generally distributed throughout the country, and sometimes occurs in company with *pictorum*. In the parish of Harting neither of these two species has been met with.

Anodonta cygnea. The Swan Mussel.—Common in ponds and pools, in the mud of which it may be found deeply sunk, with the posterior end only of the shell, where the respiratory syphon is situated, above the surface. Some unusually large specimens of this mussel have been taken out of the Vicarage Pond at Cowfold, near Horsham. One of these, now before me, measures seven inches by three inches and a half. This is much above the average size; but some years ago several were taken out of a decoy pond in Firle Park, Sussex, measuring eight inches in length and nine in circumference.*

It would be proper to introduce here the family *Dreissenidæ*, in order to notice the Zebra Mussel, *Dreissena polymorpha*, which is generally distributed in our navigable rivers; but none of the Sussex conchologists make mention of it in their lists, and for the present therefore it remains excluded from the freshwater Mollusca of that county.

UNIVALVES (*GASTEROPODA*).

Order PECTINIBRANCHIATA.†

Fam. NERITIDÆ.

Neritina fluvialilis. The River Neritina.‡—Usually found on a stony or gravelly bed in slow rivers, streams and lakes, into

* Merrifield, 'Nat. Hist. Brighton,' p. 155.

† Having comb-like gills.

‡ *Neritina* is a diminutive of *Nerita*, the ancient name of a sea-shell.

which water flows. Specimens, however, have been procured from mud thrown out of a ditch in the level of the Arun between Burpham and Arundel.—B. It may sometimes be found on the submerged leaves of the yellow water lily, *Nuphar lutea*. This is the only freshwater species of the genus to be found in this country, although there are several marine forms which are also met with in brackish water.

Fam. PALUDINIDÆ.

Paludina vivipara. Common Marsh-shell.—Occurs in the Arun.—B. I cannot help thinking that I have observed it in the ditches of the Pevensy level, and in the marsh-drains between Siddlesham and Selsea; but I have traversed so many marshes in different parts of the country that I may be mistaken as to these particular localities. I remember to have noticed this shell as common enough in some of the fen dykes of Cambridgeshire. Mr. W. Jeffery has recently informed me that *Paludina vivipara* occurs at Wisboro' Green, and that during the summer of 1877 he found it plentifully in a small stream which supplies a portion of the Wey and Arun Canal.—H.

Bythinia tentaculata. The Tentacled Bythinia.—Mr. Gwyn Jeffreys has pointed out that, although the derivation of the word *Bythinia* would imply that these mollusks inhabit deeper water than others of the same family, such is not the case. They generally frequent small streams, canals, shallow ponds and ditches, where they lay their eggs in three long rows on stones, as well as on the stalks and leaves of water-plants. In appearance the shell is not unlike a miniature *Paludina*, but the animal is oviparous instead of ovo-viviparous, and sessile-eyed instead of stalk-eyed. It is abundant in still stagnant ditches in the levels of all the Sussex rivers.

Bythinia Leachii. Leach's Bythinia.—Of rarer occurrence. Has been met with in a few of the ditches of Henfield level, and at Eastbourne.—B. Mr. Unwin includes it under the name *ventricosa*, Gray, as occurring at Lewes in ditches by the side of Kingston Road.

Fam. VALVATIDÆ.

Valvata piscinalis. Common Valve-shell.—In the ditches of Henfield level and at Eastbourne.—B. Very common in ditches

about Lewes.—U. Abundant in the neighbourhood of Harting.—W. Common also in the vicinity of Brighton.—M.

Valvata cristata. The Crested Valve-shell.—In weedy ditches at Eastbourne, and in a pond at Old Dean Farm, Henfield, on the dead stalks of the weeds.—B.

Order PULMONOBRANCHIATA.*

Fam. LIMNÆIDÆ.

Planorbis corneus. The Horny Coil-shell.—Abundant in stagnant ditches in the levels of the Arun, Adur, Ouze, and Cuckmere rivers.—B. In the ditches at Malling, and very fine in ditches on Pevensy level.—U. Mr. W. Jeffery remarked it in great numbers in the mud thrown out of a “rithe” some years ago at Bersted.

Planorbis albus. The White Coil-shell.—Common in ponds on the clay, but not found in those of the sand or chalk.—B. Mr. W. Jeffery has found it in the stream at Ratham.

Planorbis glaber. The Smooth Coil-shell.—“I have only found this species in a small pond in my own grounds at Cowfold.”—B.

Planorbis nautilus. The Nautilus Coil-shell.—At Ratham and Wisboro’ Green.—J. Under the synonym *imbricatus*, Mr. Unwin includes this species in his list of Mollusca in the vicinity of Lewes. He describes it as “rare on *Callitriche verna* in a ditch near the Ouse.” It is included, under the same name, in the Brighton list without any comment. Mr. Borrer names it *Planorbis cristatus*, and notes it as occurring in a shallow pond at Cowfold, and in some of the ditches in the level of the Adur at Henfield.

Planorbis carinatus. The Keeled Coil-shell.—Common in the levels of the Arun and the Adur, in weedy ditches and occasionally in ponds.

Planorbis complanatus, vel *marginatus*. The Flattened Coil-shell.—Found in similar situations to the last-named, and much commoner. Occurs in all the ponds and water-courses about Harting.—W.

Planorbis vortex. The Whorled Coil-shell.—Common in stagnant weedy ponds.

* Having lung-like gills.

Planorbis spinorbis. The Round-spired Coil-shell.—In clear springs and springy ditches. Less abundant than the last.

Planorbis contortus. The Twisted Coil-shell.—In the ditches of all the Sussex rivers, and occasionally in very weedy ponds.

Planorbis fontanus. The Shining Coil-shell.—Sparingly in clear water, at Cowfold and Henfield, amongst *Callitriche verna* (B), and in the Mill-stream at Ratham (J).

Planorbis nitidus. The Streaked Coil-shell.—In a ditch near the ruins of the Priory at Lewes, and in a pond at Old Deane Farm, Henfield.—B. Mr. Unwin has met with it in a ditch in Kingston brooks, near Lewes, adhering to *Confervæ*. He has found it a good plan to drag out a quantity of the *Confervæ*, and on reaching home to place it in a basin and pour warm water upon it. The animals at once relinquish their hold and fall to the bottom, when they may be easily collected. Mr. Borrer, in a recent letter, has pointed out that *Segmentina lineata*, Fleming, of Mr. Unwin's list is referable to the present species, *Planorbis nitidus* Müller, and not to *Acme lineata*, Draparnaud, as stated *ante* p. 126. It would seem, therefore, that Mr. Unwin has given the same species twice under different names. Mr. Weaver has seen specimens of this shell said to have been collected in the parish of Harting, but has not found it there himself.

Physa fontinalis. The Stream Bubble-shell.—May be found in water-cress and other aquatic plants in streams and canals, and is everywhere tolerably common. It occurs in most of the ditches of the before-mentioned levels.

Physa hypnorum. The Slender Bubble-shell.—Is rather more local, affecting ponds, ditches, and rank grass in dried-up pools. Mr. W. Jeffery has noted it at Ratham, near Chichester, and at Lindfield. Both these species are gregarious, and may be recognized at once by the polished appearance of their shells, the surface of which, being more or less enveloped by an expansion of the mantle, is kept bright by the lubricating friction which it undergoes. The characters by which *fontinalis* may be distinguished from *hypnorum* are the oval instead of oblong shell, larger and wider mouth, smaller number of whorls (that is, four or five, instead of six or seven), shorter spire, and deeper suture. The foot of the animal in *fontinalis* is rounded in front instead of lanceolate, and the body is of a uniform greyish colour, instead of being minutely speckled as in *hypnorum*. Gray considered these two generically distinct,

and placed the latter in the genus *Aplexus*, pointing out that in *hypnorum* the mantle has plain edges, and is not expanded over the shell, which has a long spire and an epidermis; while in *fontinalis* the mantle is lobed, expanding over the shell, which has a short spire and no epidermis. In regarding these differences as specific and not generic, we have followed Turton, Forbes and Hanley, Gwyn Jeffreys and other authorities.

Limnæa peregra. The Wandering Mud-shell.—Common in ponds and ditches.

Limnæa stagnalis. The Pond Mud-shell.—Abundant everywhere in ponds and stagnant ditches.

Limnæa auricularia. The Ear-shaped Mud-shell.—In similar situations, but much less common.

Limnæa palustris. The Marsh Mud-shell.—Generally distributed, and not uncommon in the marsh dykes, and here and there in stagnant water.

Limnæa truncatula. The Truncate Mud-shell.—In shallow ditches; fond of crawling on the half-dried mud at the sides.—B. Mr. Unwin has found it on the mud principally by the side of the Cut near Landport, where it is rather plentiful. This is the only locality, however, in which he has met with it. Mr. Weaver has noted it as a rare species in the neighbourhood of Harting. At Ratham, near Chichester, Mr. W. Jeffery has found it plentiful, as also at Lindfield.

Limnæa glabra. The Smooth Mud-shell.—Very local. In narrow grassy ditches at Albourne, Cowfold, and Henfield.—B. In a ditch near Malling.—U. Rare in the vicinity of Brighton.—M.

Ancylus fluviatilis. The River Limpet.—On and under stones in the shallow parts of running water, and may be found sometimes on the under side of the submerged leaves of the yellow water lily, *Nuphar lutea*.

Ancylus lacustris, vel *oblongus*. The Lake Limpet.—Not so common as the last named. Mr. Borrer has found it at Cowfold adhering to shells of *Limnæa auricularia*, and at Henfield and Albourne on the under sides of the leaves of *Nymphæa alba* and *Nuphar lutea*. Recorded as occurring in the vicinity of Lewes (U), and in the neighbourhood of Brighton (M). These so-called freshwater Limpets furnish another illustration of the fact that both salt and fresh waters have their respective representative forms.

Before concluding, it may be well to remark that the nomenclature adopted by Mr. Borrer is that of Lovell Reeve's 'Land and Freshwater Mollusks of the British Islands.' Mr. W. Jeffery and Mr. Unwin follow Gray's edition of Turton's 'Manual.' Mr. Weaver and the authors of the Brighton and Eastbourne Lists do not specify any particular text-books. As already observed, the systematic arrangement adopted in the present Catalogue is that of Mr. Gwyn Jeffreys, as published in the first volume of his 'British Conchology.'

ERRATUM.—*Clausilia biplicata* should be erased from the present Catalogue. It appears on investigation that at present there is no good reason for including it amongst the land-shells of Sussex.

THE MAMMALS OF SHAKSPEARE.

BY HENRY REEKS, F.L.S., F.Z.S.

(Continued from p. 118.)

THE HEDGEHOG, *Erinaceus Europæus*.

Although the Hedgehog is undoubtedly a destroyer of the eggs of poultry and game birds, and probably the young also, if we may believe the apparently conclusive evidence which has been published at various times in 'The Zoologist,' 'The Field,' and elsewhere, yet it has many redeeming qualities. As a destroyer of cockroaches, snails, and other "vermin," it certainly, in my opinion, has no equal, and should therefore be considered an especial friend by all who possess a walled-in garden or a kitchen infested with cockroaches.

Hedgehogs may be easily tamed, and will feed readily on almost any animal food, besides bread and milk. They will also destroy snakes and adders. There is a widespread belief that they are innocuous to all known poisons. How far this may be true I am unable to say; but perhaps some of the more scientific

readers of 'The Zoologist' may have experimentalized, and can enlighten us.

As an article of food, the Hedgehog, when properly dressed, is said to be very good eating, tasting something like a rabbit. The old belief in cows being suckled by Hedgehogs is now pretty well exploded, even among the most ignorant. In some out-of-the-way places, where it is difficult to get properly constructed muzzles for weaning calves, I have heard of the skin of an Hedgehog being used to answer the same purpose by tying it round the nose-band of the calf.

" * * * Like *Hedgehogs*, which
Lie tumbling in my barefoot way, and mount
Their pricks at my footfall," &c.

Tempest. Act ii., Scene 2.

Again :—

1ST FAIRY. "You spotted snake, with double tongue,
Thorny *Hedgehogs*, be not seen ;
Newts and blindworms, do no wrong ;
Come not near our fairy queen."

Midsummer Night's Dream. Act ii., Scene 3.

In *King Richard III.* Act i., Scene 2, the word *Hedgehog* is used as an epithet.

Shakspeare appears to have been well versed in the vernacular names of our indigenous wild animals ; for, besides the usual name of *Hedge-hog*, the animal is locally called *Hedge-pig* and *Urchin*, with both of which names Shakspeare was familiar, as the following quotations will show :—

1ST WITCH. "Thrice the brindled cat hath mew'd."

2ND WITCH. "Thrice ; and once the *Hedge-pig* whin'd."

Macbeth. Act iv., Scene 1.

"And when they showed me this abhorred pit,
They told me, here, at dead time of the night,
A thousand fiends, a thousand hissing snakes,
Ten thousand swelling toads, as many *urchins*,
Would make such fearful and confusèd cries
As any mortal body, hearing it,
Should straight fall mad, or else die suddenly."

Titus Andronicus. Act ii., Scene 3.

Shakspeare also makes use of the word *urchin* as an adjective when he speaks of a "grim and *urchin*-snouted boar" (*Venus and Adonis*, stanza 185).

THE MOLE, *Talpa Europæa*.

We now come to one of the most useful, though one of the most persecuted, of British mammals—"The blind Mole," which "casts copp'd hills towards heaven" (*Pericles*, Act i., Scene 1).

When will occupiers of land learn to know that the beautiful verdure of their parks and pastures is mainly preserved by Moles, whose chief food consists of the larvæ of Coleopterous and Lepidopterous insects, besides worms and slugs. The hillocks, which to many appear so unsightly, should never remain long enough for the grass to go through them. No artificial manure, costing, say, ten times as much as the labour of spreading the fresh hillocks evenly over the grass, will produce anything like so good a crop of grass. I have tried it for years, and can speak from experience. Besides it should be borne in mind that the most expensive top-dressings will not destroy the insect enemy at work at the roots of the grass, even if applied thick enough to kill the grass itself! Surely, then, it is far better and far more economical to manure the ground with the hillocks themselves.

Shakspeare was well acquainted with the acute sense of hearing in the Mole. He makes Caliban say—

"Pray you, tread softly that the blind *Mole* may not
Hear a footfall: we are now near his cell."

Tempest. Act iv., Scene 1.

In the first part of *Henry IV.* (Act iii., Scene 1), Hotspur complains—

"He angers me
With telling me of the *moldwarp* and the ant;
Of the dreamer Merlin and his prophecies," &c.

As an epithet the name "Mole" was well applied by Hamlet to the ghost of his father—

"Well said, old *Mole*! can'st work in the earth so fast?
A worthy pioneer!"

Hamlet. Act i., Scene 1

The belief that the Mole is unable to see is wide-spread and ancient. Autolycus, in *A Winter's Tale* (Act iv., Scene 3), says—
 “I will bring these two Moles, these blind ones, aboard him.”

THE LION, *Felis leo*.

As may be supposed such a poet and naturalist as Shakspeare has not failed to pay due respect to the “king of beasts,” and to avail himself, in his descriptions, of the many attributes of the noble animal. The Lion is mentioned by him upwards of a hundred and twenty times, or about twice as often as any other animal. In the limited space at disposal it would of course be impossible, even if it were desirable, to quote half of them; but a few of the more notable instances may be given as specimens. He has well pictured the

“O’ergrown Lion in a cave
 That goes not out to prey.”

Measure for Measure. Act i., Scene 4.

and the attitude of the Lionness that

“Lay crouching, head on ground, with cat-like watch.”

As You Like It. Act iv., Scene 3.

The animal’s terrific roar is often referred to:—

“’Twas a din to fright a monster’s ear,
 To make an earthquake! sure it was the roar
 Of a whole herd of Lions.”

Tempest. Act ii., Scene 2.

The question which Shakspeare puts into the mouth of Petrucio—

“Have I not in my time heard Lions roar?”

he could probably have answered himself in the affirmative, leaving it to be inferred that the roar proceeded from behind the strong iron bars of some showman’s cage.

“Small curs are not regarded when they grin;
 But great men tremble when the Lion roars.”

Henry VI. Part II. Act iii., Scene 1.

Readers of the plays will well remember the humourous allusions to the Lion in *Midsummer Night’s Dream*, in the amusing comedy

which was got up in honour of the marriage of Theseus with Hippolyta.

THE TIGER, *Felis tigris*.

The Tiger is mentioned a score of times throughout the plays, but a couple of references, perhaps, will here suffice:—

* * * “The mild hind
Makes speed to catch the *Tiger*: bootless speed,
When cowardice pursues, and valour flies.”

Midsummer Night's Dream. Act ii., Scene 2.

Menenius, in recounting the evil qualities of Marcius, says:—

“I paint him in the character. Mark what mercy his mother shall bring from him: there is no more mercy in him than in a male *Tiger*.”

Coriolanus. Act v., Scene 4.

THE LEOPARD, *Felis leopardus*.

The Leopard, sometimes called “Pard,” is mentioned about half-a-dozen times. See *Richard II.*, Act i., Scene 1; *Henry VI.*, First Part, Act i., Scene 5; *Timon of Athens*, Act iv., Scene 3; *Midsummer Night's Dream*, Act ii., Scene 2; *Love's Labour Lost*, Act v., Scene 2; and *The Tempest*, Act iv., Scene 1.

“Lubbar” is probably a corruption of “Libbard,” an old name for Leopard. We find Falstaff “indited to dinner to the *Lubbar's* Head, in Lumbert Street, to Master Smooth's, the silkman” (*Henry IV.*, 2nd Part, Act ii., Scene 1). The arms of the Weaver's Company being a chevron between three leopards' heads would account for “Master Smooth, the silkman,” adopting a leopard's head as a “sign.”

Under the name of “Panther,” the Leopard is mentioned three times in the play of *Titus Andronicus*. See Act i., Scene 2, Act ii., Scene 2; and again

“Come on, my lords, the better foot before
Straight will I bring you to the loathsome pit,
Where I espied the *Panther* fast asleep.”

Id. Act ii., Scene 4.

THE OUNCE, *Felis uncia*.

Mentioned once in the charm uttered by Oberon when, squeezing the juice of a flower on Titania's eyelids as she sleeps, he says—

“What thou seest when thou dost wake
Do it for thy true love take;
Love, and languish for his sake:
Be it *Ounce*, or Cat, or Bear,
Pard, or Boar with bristled hair,
In thy eye that shall appear
When thou wak'st, it is thy dear.
Wake when some vile thing is near.”

(To be continued.)

—o—

ORNITHOLOGICAL NOTES FROM THE MOY ESTUARY.

BY ROBERT WARREN.

OWING to the unusual mildness of the past winter, but few rare birds from the north visited this neighbourhood, and some of our regular winter visitors appeared in much smaller numbers than usual.

Lapwings were the only birds I remarked in larger numbers than in previous years; they commenced assembling on the sands in August, and by the first week in September the flocks were largely increased. By the 1st October the largest number of Lapwings were to be seen on the sands that I ever remember to have observed. Some of these flocks evidently consisted of home-bred birds, but the greater part must have been strangers. The increase in the number of home-bred birds is easily to be accounted for, by the unusually wet spring and summer, rain having fallen on 270 days in the year 1877; the great excess of moisture proving favourable to the increase of the Lapwings' natural food, and thus enabling them to rear their broods with greater ease than in a dry season, when many young birds must perish from want of both food and water.

Woodcocks and Snipe are much scarcer than usual, the former remarkably so. Indeed all the shooters of my acquaintance

complained loudly of the shooting season of 1877-78; and their annoyance was much aggravated by the early closing of the season, on the 15th February, by the 'Wild Fowl Preservation Act.'

Although a few Wigeon appeared on the 9th October they only remained for a day or two, and I did not see any others until the 29th of that month. The main flight did not arrive until November, when they appeared in their usual numbers, and I perceived no scarcity of birds throughout the winter. Last season I noticed Wigeon remaining about the estuary and river up to the 20th April; but this spring they appear to have taken their departure a fortnight earlier, none being observed since April 6th.

Wild Ducks visited the bay and estuary in much smaller numbers this winter than usual, and many large flocks seen at early morning moving from their inland feeding-grounds, to pass the day on the quiet waters of the bay, were not observed on flight this season.

Pintails were also very scarce, only two or three having been observed throughout the winter, although parties of eight or ten are usually seen associating with the wigeon. Neither Long-tailed Ducks nor Pochards were observed in the bay or estuary this season, though on the 23rd April, 1875, I saw a pair of the first-named ducks near Killala, and shot the female.

The Scaup, so common in some parts of Ireland, is a rare visitor to the Moy Estuary. I shot a young male on the 23rd October; it showed no indications of assuming the adult plumage, save an odd green feather showing here and there on the head. This bird was the smallest specimen of the Scaup I ever shot, being only seventeen inches in length. I came across a duck of this species a few days after, and on the 3rd November a little party of three fine old males.

Sheldrakes, I am happy to say, are increasing in numbers, owing to the protection afforded them in their breeding haunts by Captain Kirkwood, of Bartragh. Ten fine birds haunted the sands throughout the winter, and there is now every probability that several pairs will nest this summer in the sandy rabbit-burrows of that island.

Great Northern Divers appeared as usual, and none of their favourite stations were unoccupied this winter. Red-throated

Divers were very scarce, three birds being the greatest number I saw on any day when out in my punt; indeed, since I commenced punt-shooting I never remember these birds so scarce in this neighbourhood.

Wild Geese appeared in their usual numbers this winter, and on the 13th April I saw a great many resting in the meadows along the Moy near Foxford, their usual haunts. When passing near the railway, I remarked some birds within a hundred and fifty or two hundred yards of the train, and, as well as I could judge, they were White-fronted Geese—the commonest inland-feeding geese we have.

Wild Swans did not come under my observation this winter, nor did I notice their whooping call, so often heard when the birds pass over this locality on their way to the mountain loughs in Erris.

On the 21st December, when at Bartragh, I saw either an Iceland or Glaucous Gull flying over the Enniscrone sand-hills; and on the 26th, when walking near Killanly Marsh, I observed a young Iceland Gull, in company with a young Herring Gull, sitting on the water about forty yards from the shore. The Iceland bird seemed to be in the second year's plumage—at least it was in that creamy-looking stage that appears to me to indicate the second year. On the 29th December, being anxious to obtain some Purple Sandpipers for a friend's collection, I visited a favourite haunt of theirs on the coast, about two miles below Enniscrone, and when about half-way down I observed a young Iceland Gull flying about a grass-field in which a flock of Common Gulls were resting; but, as it did not come within shot, I went on to the Sandpipers' haunt, and having obtained a few specimens I set out on my return, and when again passing by the field in which I had seen the Iceland Gull in the morning, I was agreeably surprised to find it there still. It flew out over the shore, and wheeling round within shot gave me a chance, which I took advantage of and brought it down. It proved to be an immature bird in the first year's plumage, and was the same I had seen in the morning, for a broken feather in the wing enabled me easily to identify it.

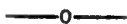
On the 17th January, when returning from Bartragh in my punt, I observed a young Black-backed Gull on the rocks near Scurmore, feeding on some garbage left by the tide. Shortly after, a young Glaucous Gull, passing by, and seeing it feeding, wheeled round

to join it, but the latter beat it off, and every time it attempted to feed it was driven away, until at length it flew off about two hundred yards to where a dead dog was lying at high-water mark, and began to feed on it so greedily that it took no notice of my punt until I had come close within shot, when, as it was making off, I knocked it over. It proved to be a full-grown specimen of the Glaucous Gull in the first year's plumage, and although quite as large and as strong-looking as the Black-backed Gull, yet it had not the courage to fight for its share of the food.

The weather had been wet and stormy during the greater part of January, but on the 24th it became very cold, with a heavy gale from the N.N.W., accompanied by violent hail-storms. About three o'clock on that day I was in the farm-yard, standing near the cattle-houses, when I observed a little bird flitting about a manure-heap, but as there were several tits and finches moving about I did not take much notice of it at first. After a time, however, it came quite close to me, and I then saw that it was either a Willow Wren or Chiffchaff, but its feathers being much puffed out from the effects of the cold I was unable to decide which. It remained about the heap until dark, attracted by the insects found there, as well as by the warmth. On the following day the weather had become colder, with snow lying on the ground, and as I was in the yard about the same hour I again perceived the little bird about the manure-heap, but evidently much weaker and suffering more from the cold, and as I was then able to get a closer view of it than on the first day I came to the conclusion that it was a Chiffchaff, as it appeared darker underneath than the Willow Wren is, and the call-note sounded harsher. This is the earliest date at which I have seen the Chiffchaff in this locality. Some years ago, at Castle Warren, Co. Cork, I remember seeing and hearing a Chiffchaff as early as February 18th and March 2nd, and as late as the 22nd November.

Being anxious to ascertain whether any of our winter visitors remained after the departure of the main flocks to their northern haunts, I took my punt round the estuary on the 6th April, and reconnoitred the wide expanse of sand extending from Scurmore to Killala. I found that the Wigeon had all left, as also the Knots, but I fell in with a flock of fifteen or twenty Gray Plovers, none of which showed any sign of assuming the black breast peculiar to the summer plumage. The greater part of the Godwits must have

left, for I saw only one flock of about thirty birds. It is not unlikely that, before leaving, their numbers may be recruited by birds coming from the south; these rest in the bay for some days or weeks before proceeding to their northern breeding haunts. On the same day I saw about twenty Sanderlings, all of which were still in the winter plumage.



OCCASIONAL NOTES.

GOATS EATING YEW-LEAVES.—In his recently-published fourth edition of 'The Moor and the Loch,' Mr. Colquhoun speaks of the Goats on Crap-na-gower, "busily engaged in cropping the lower branches of a venerable yew" (vol. i., p. 91), "munching their delicious repast of yew-twigs" (p. 93), and other similar expressions, and describes a fine old Goat who "hanged himself by the horns on a yew-tree, in attempting to feed upon the higher branches" (p. 90). Is it then the fact that Goats can and do eat yew-leaves with impunity, while horses, cows and other animals are poisoned if they feed on them? Gilbert White, touching on this subject in his 'Antiquities of Selborne' (Letter V.), says:—"While mention is making of the bad effects of yew-berries, it may be proper to remind the unwary that the twigs and leaves of yew, though eaten in a very small quantity, are certain death to horses and cows, and that in a few minutes. A horse tied to a yew-hedge, or to a faggot-stack of dead yew, shall be found dead before the owner can be aware that any danger is at hand, and the writer has been several times a sorrowful witness to losses of this kind among his friends; and in the island of Ely had once the mortification to see nine young steers or bullocks of his own all lying dead in a heap from browsing a little on a hedge of yew in an old garden into which they had broken in snowy weather. Even the clippings of a yew-hedge have destroyed a whole dairy of cows when thrown inadvertently into a yard." Since this observation was made, a century ago,—and it was no discovery of White's,—the truth of it has been frequently verified. Two instances have come under my own observation. In one case several cows and heifers were poisoned from feeding on the leaves of a growing yew-tree, and in the other a valuable cow belonging to my father died from the effects of eating some clippings of yew which the gardener had incautiously thrown down in a meadow, into which the cows were driven the same evening after milking time. Fortunately only one of them discovered the heap of leaves and twigs, or

greater mischief might have ensued. "And yet," says Gilbert White, "sheep and turkeys, and, as park-keepers say, deer, will crop these trees with impunity." Are Goats, then, also exempt from any ill effects? Assuming that the Goats referred to by Mr. Colquhoun were feeding on the Irish yew, and not the common species (he does not say which it was), this seems to be equally poisonous, at least in the case of other animals. Pheasants have been poisoned with both (see 'The Field' of Nov. 25th and Dec. 2nd, 1876). This makes me doubt whether it can be possible that turkeys can eat yew with impunity, as stated by Gilbert White, not from his own observation, be it remarked, but apparently from hearsay only. If true, it is as remarkable a fact as that sheep, deer and goats suffer no ill effects, while cows and horses are invariably poisoned. How is this to be explained?—J. E. HARTING.

DIFFERENCE IN MODE OF ATTACKING TURNIPS BY RABBITS AND RATS.—Mr. Miller's note (p. 100) on the difference in the mode of feeding in the Rabbit and the Hare, I can neither confirm nor question, for Hares are scarce here; but I have always observed a marked difference in the method pursued by a Rabbit and a Rat when eating a turnip—a difference somewhat similar to that which Mr. Miller has noted in the case of the Rabbit and Hare. Rats and Rabbits prefer Swedish turnips to every other kind grown about here. If the turnip is growing, and portion of the bulb is still in the ground, a Rat generally eats all round the turnip, and leaves the centre for the last; whereas a Rabbit begins at the side and works right across to the other side. A Rat bites off the skin or rind and leaves it in little pellets around the bulb; a Rabbit eats skin and all. This I have noticed for twenty years, Rats and Rabbits being very common here. Thus one can readily know when Rats have been at work and when Rabbits have been the depredators. Rats very often leave a turnip half-eaten and go to another; but if they mean to finish the bulb they invariably conclude in the middle. The top falls over at last, with a truncated portion of the bulb attached. — RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

NESTING HABITS OF THE KINGFISHER.—Kingfishers are amongst our early breeders. I have found their eggs on the 12th April; but from the 23rd to the 30th of that month is the best time to secure them in the Midland Counties, unless the season should be an unusually late one, in which case the first week in May will be a more likely time. They choose either a deserted Water Rat's or Sand Martin's hole, or, what is more usual, make one for themselves. It is generally from a yard to a yard and a half

in length (sometimes less than a yard) and slopes upwards, probably for drainage. They generally select the banks of rivers or brooks. Small streams communicating either with ponds or rivers are very favourite places, and from the secluded haunts of which they sally out to fish. It is immaterial whether there are fish in the brook, so long as they can procure them in the neighbourhood. The nearest hole to the water I ever found them nesting in was one in the banks of the River Trent, only about three feet above the water. They generally prefer from five to twenty feet above it, and are fond of a bank overhanging it, and with trees about; this probably leaves the hole less open to observation, and accords more with their secluded habits. I once found a nest (so-called) in a gravel-pit a quarter of a mile from water, but as a rule they do not leave the banks bordering on that element. It is easy to anyone familiar with the habits and breeding-places of these beautiful birds to find their eggs. You may generally see by the droppings where the birds most frequently sit, and as this is generally near the hole selected, look about, and on discovering a hole take a little of the earth from the bottom of it in your fingers, and smell it. If they use it the strong smell of fish will soon make you aware of the fact, and you will probably see some bones with it. On getting your arm up, which you will probably fail to do without enlarging the entrance, you will discover more bones, and at the end you may find six or seven eggs, which before being blown look like pearls, from the yelk showing through the glossy and pure white shell. The eggs are almost round in form. Nest there is none; this I have long been quite sure about, and I remember once opening up a hole near the top of a bank till I got to the eggs, which are always placed on a mass of small bones which the bird has disgorged in a small depression scooped out for the purpose. Those naturalists who speak of their constructing a nest of intertwining bones together are quite mistaken. The bird may frequently be caught when sitting, and I have sometimes been startled by her sudden exit while preparing to insert my arm. They are very shy and wary on the approach of danger, leaving the nest very quietly, and only uttering their shrill loud pipe on getting some distance away. They breed twice in the season, I think, for I have found their eggs in July. They fly very quickly, generally keeping near the water. I have seen them a mile away from where I knew their nests to be, and occasionally in meadows some distance from streams or ponds. Severe winters kill them. I never found more than one pair inhabiting the same brook. In this respect they seem very solitary. You may see them with their young ones flying one after the other along a stream, or seated on a rail or tree feeding them; but as soon as the young birds can take care of themselves they separate. Kingfishers catch their prey by watching from a tree or rail and darting with great rapidity into the water, or by hovering like a Kestrel and then darting down, but generally by the former method.

On killing the fish they swallow it whole, and subsequently disgorge the bones. It is very interesting to watch them fishing. They are fond of certain trees and rails, where they sit motionless till an unhappy fish comes in sight, when, before you can speak, you see the fish in the bill so admirably adapted for taking, holding and killing it. They are very often unsuccessful in their attempts, and I have seen them go in six or seven times and only bring out one fish. In this rough sketch I have spoken of their not making any nest, and yet alluded to their nest. This apparent contradiction will be understood by all naturalists, and needs no apology.—HENRY GEORGE TOMLINSON (The Woodlands, Burton-on-Trent).

CROSSBILL NESTING IN SUTHERLANDSHIRE.—I have just returned from Sutherland, bringing with me a prize which has seldom gladdened the eyes of British ornithologists, viz., a nest of the Crossbill, with its full complement of five eggs. The nest was taken on Monday last, and my informant spoke very feelingly of the difficulty he had in laying hands on it even after discovering it. It was placed, he says, not in the fork formed by the branch springing from the stem of the spruce fir tree, but almost at the end or extremity of the branch itself! As the branch was too slight to bear the weight of any person going along it towards the nest, the only plan to obtain it was to bend back the branch very carefully, and so bring the nest within reach. The last Crossbill's nest I got was in March, 1874, and it had but four eggs.—THOMAS MACKENZIE (Aldie House, Tain).

WOOD PIGEON NESTING NEAR A HOUSE.—This spring, for the fourth consecutive season, a pair of Wood Pigeons have nested in trees on my lawn, within a few yards of the house. During the last winter the flocks of this species in the beech-hanger have been unusually large.—THOMAS BELL (The Wakes, Selborne).

LAND AND FRESHWATER MOLLUSCA OF SUSSEX.—In May, 1868, I communicated to 'The Zoologist' a list of shells which I had noticed in West Sussex; and the perusal of your recent Catalogue of Sussex Mollusca prompts me to send you a note of the additions which I have made to my list since that date. They are the following:—

Paludina vivipara. Occurs at Wisboro' Green. I found it plentifully last summer in a small stream which supplies a portion of the Wey and Arun Canal with water (called there the "feed ditch"), and have no doubt that it occurs throughout the canal.

Helix arbustorum. Found this shell plentifully near Pulborough last August, when on an excursion of the Chichester and West Sussex Natural History Society.

Helix pulchella. Found at Ratham, and at Bersted, near Bognor.

Limnæus trunculatus. Have found this shell more plentifully about here since my report in 1868, and have also found it at Lindfield. It has a habit of following the flow of water during floods, and often gets left high and dry in summer, but appears capable of sustaining life so long as a little moisture is left.

Ancylus fluviatilis. Common in our running streams.

Physa fontinalis. Generally distributed, but not plentiful.

Aplexus hypnorum. Have found this shell in one or two localities near here, and also at Lindfield.

Planorbis corneus. Found this shell in great numbers, some years ago, in the mud thrown out of a "rithe" at Bersted. Have never ascertained if it is to be found living there now, but have been told that there is a probability of its having been destroyed by an overflow of sea-water which occurred some time ago.

Planorbis vortex. Found in some stagnant pools.

Planorbis fontanus. Occurs in the mill-stream at Ratham.

Planorbis nautilus. Found at Ratham and also at Wisboro' Green.

Planorbis albus. In stream at Ratham.

Pisidium obtusale. At Burton, near Petworth.

Unio pictorum. At Burton.—WILLIAM JEFFERY (Ratham, Chichester).

[This note having reached us while the concluding portion of the "Catalogue of Sussex Mollusca" was passing through the press, we have been enabled to incorporate most of the above additions.—ED.]

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 21, 1878.—W. CARRUTHERS, Esq., F.R.S., Vice-President, in the chair.

The following gentlemen were elected Fellows of the Society:—John Evans, Esq., F.R.S., Hemel Hempstead; C. P. Ogilvie, Esq., Leiston, Suffolk; Arthur Veitch, Esq., King's Road, Chelsea; and Sydney H. Vines, Esq., B.A., Christ's College, Cambridge.

On behalf of Mr. J. W. Clark, of Cambridge, some excellent mounted specimens of the male, female, and young of the Fur-bearing Seal of the North Pacific were exhibited. Mention was made of the "rookeries" of these creatures, containing over three million Seals in a compact area.

Like old Turks, a male dominates over a harem of a dozen or fifteen females, which he guards with jealous care, for two months or more never stirring from the spot, and meantime fights terrific battles for its maintenance. A neutral zone exists to the rear of the breeding-grounds, where the enforced bachelors and adolescent young of both sexes repair. These come and go continuously, passing to and fro through free lanes of passage. Others of these animals delight in dashing among the breakers on the surf, or in droves frolic and play on the sand and grassy dunes adjoining the more rocky ground of the "rookery." The method of shaving the fleshy side of the skin, thus cutting loose the roots of the long coarse hairs, and retaining the superficial fine fur of commerce, was explained, as also other interesting points in the economy and natural history of those animals. The value of the stuffed specimens of *Otaria ursina* which were exhibited may be inferred from the fact that they are the only good examples of the species in any accessible Museum in Europe. The British Museum possesses only an old battered skin, while in St. Petersburg — rather an out-of-the-way spot for easy reference to naturalists—two specimens are said to exist.

In the absence of the author, the Secretary read the main points of a communication, by Mr. Benjamin Clarke, on "A New Arrangement of the Classes of Zoology," founded on the position of the oviducts, or, when these are absent, on the position of the ovaries, including a new mode of arranging the *Mammalia*. The principle of arrangement adopted is said to be in harmony with a system of classification of the phanerogamous plants previously proposed by the author. His present zoological arrangement he submits in a tabular form, adding a commentary on the various grouping adopted.

April 4, 1878.—W. CARRUTHERS, Esq., F.R.S., Vice-President, in the chair.

The following gentlemen were balloted for and elected Fellows of the Society:—Frederick Manson Bailey, Esq., of Brisbane, Queensland; Dr. Archibald Hewan, Chester Square, S.W.; George Payne, jun., Esq., Sittingbourne; and James Robert Reid (Bengal Civil Service), Edinburgh.

The only zoological paper read at this meeting was "On some minute Hymenopterous Insects," by Prof. J. O. Westwood. He describes the following new forms:—*Mymar Taprobanicus*, *M. Wollastonii*, *Alaptus excisus*, *Oligosita subfasciata*, *O. Staniforthii*, *O. nodicornis*, and *Trichogramma (Aprobosca) erosicornis*. These singular insects, although of microscopic minuteness, possess considerable interest, not only from their peculiar structure, but also from their curious habits.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

April 2, 1878.—Prof. NEWTON, F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, 1878, and called special attention to an Isabelline Bear (*Ursus isabellinus*, Horsf.), received in exchange from the Zoological Gardens, Calcutta; to a Le Vaillant's Darter (*Plotus Levallanti*), new to the collection; and to two examples of the very singular Water Tortoise, of the Amazons, generally known as the Matamata (*Chelys matamata*), remarkable for the long pendent filaments on its neck.

A communication was read from the Marquis of Tweeddale, containing the seventh of his contributions to the ornithology of the Philippines. The present paper gave an account of the collection made by Mr. A. H. Everett in the Island of Panaon.

Mr. A. G. Butler read descriptions of new *Lepidoptera* of the group *Bombycites* in the collection of the British Museum.

A communication was read from M. E. Oustelet, containing the description of a new species of Cassowary, from New Guinea, proposed to be called *Casuarius Edwardsi*.

A communication was read from Mr. F. Nicholson, containing the description of an apparently new species of American Pipit from Peru, which he proposed to call *Anthus peruvianus*.

Professor A. H. Garrod read some notes on the placentation of *Hyomoschüs aquaticus* as observed in the pregnant uterus of a fresh specimen of this animal recently examined.

April 16, 1878.—E. W. H. HOLDSWORTH, Esq., F.Z.S., in the chair.

Mr. Slater exhibited and made remarks on a typical specimen of the new Fox lately described by Mr. Blanford as *Vulpes canus*, from Baluchistan.

The Secretary exhibited, on behalf of Mr. A. Anderson, a bamboo stick with leather thong attached to it, such as is used in India for driving plough-cattle with, which had been taken out of a nest of the common Fish Eagle (*Haliaëtus leucoryphus*), in December, 1876.

Prof. Westwood communicated a memoir on the *Uraniidæ*, a family of Lepidopterous insects, with a synopsis of the family, and a monograph of one of the genera, *Coronidia*. These insects were remarkable for their extreme beauty and the difficulty which had attended their systematic classification. Their relations with other groups of Lepidopterous insects were discussed at considerable length, and their nearest affinities were shown to be with certain other moths belonging to the great division of the *Bombyces*, whilst their connection with the Hesperian butterflies, the Pseudo-sphinges, Erebidæous *Noctuæ*, and Ourapterygeous *Geometræ* was

disproved by their general structure, the venation of their wings and their transformations. A synopsis of the species of all the genera was given, and a complete monograph with figures of the genus *Coronidia*.

Mr. Gwyn Jeffreys read the first part of his work on the Mollusca, procured in the Expeditions of H.M.S. 'Lightning' and 'Porcupine.' It would be recollected that these Expeditions immediately preceded that of H.M.S. 'Challenger,' but were restricted to portions of the North Atlantic, including the Mediterranean. The Brachiopods formed the subject of the present paper. A Table of all the Brachiopods known to inhabit the European seas was given, comprising ten genera and twenty-two species, of which latter four were for the first time described and six figured. The Table also particularised the geological and bathymetrical range of all the species. Two plates accompanied the paper, and were furnished by Mr. Davidson.

Mr. G. E. Loder exhibited and made remarks on a mounted head of the Rocky Mountain Bison, remarkable for its soft, dark and long hair on the forehead. This specimen had been obtained near Denver, Colorado.

A communication was read from the Marquis of Tweeddale, containing the eighth of his contributions to the ornithology of the Philippines. The present paper gave an account of some Luzon birds in the Museum at Darmstadt, which had been sent to him for examination by Prof. Koch of that place.

A communication was read from Dr. O. Finsch, containing description of a new species of Finch from the Feejee Islands which he proposed to name *Amblymura Kleinschmidtii* after Mr. Kleinschmidt, by whom it had been found in the interior of Viti-Levu.

Dr. M. Watson read a paper containing a description of the generative organs of the male spotted Hyena (*Hyæna crocuta*), and a detailed comparison of them with those of the female of the same animal.

Messrs. Sclater and Salvin read a report on the collection of Birds made during the voyage of H.M.S. 'Challenger' at the Island of Juan Fernandez, at various points along the coast of Patagonia and at the Falkland Islands.

A second paper by Messrs. Sclater and Salvin gave descriptions of three new species of birds from Ecuador, proposed to be called *Buarremon leucopsis*, *Neomorphus radiolosus*, and *Aramides calopterus*.—P. L. SCLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 3, 1878.—H. W. BATES, F.L.S., F.Z.S., President, in the chair.

Donations to the Library were announced, and thanks voted to the donors.

Miss Eleanor A. Ormerod, of Dunster Lodge, Spring Grove, Isleworth, was ballotted for and elected a member.

Mr. McLachlan called attention, with reference to Mr. Mansel Weale's observations on *Termes trinervius* made at the last meeting of the Society, to a statement in Hagen's "Monographie der Termiten" ('*Linnaea Entomologica*,' xiv., p. 86), given on the authority of Osten-Sacken, respecting *Termes Rippertii* of Cuba, the soldiers of which species are said to exude a drop of clear liquid from the point of the head when handled. Mr. McLachlan said that it was interesting to find that Mr. Mansel Weale's observations had confirmed those formerly published.

Mr. F. Grut exhibited, on behalf of the Rev. T. A. Marshall, a collection of insects made by the latter in the Windward Islands, and read a letter which accompanied the collection.

Mr. F. Smith exhibited a series of specimens of a species of "Harvesting Ant," sent to Mr. Darwin from Florida, U.S., by Mrs. M. Treat. On comparison, the Ant appears to be identical with the species from Texas, *Myrmica barbata*, the *M. molifaciens* of Buckley. Three phials containing ants were sent, one containing specimens gradating from large soldiers to small workers, all having acutely dentate mandibles. A second phial contained ants varying in size, but all with mandibles having rounded teeth; in the specimens in the third phial the teeth were obsolete. Mrs. Treat's letter did not make it clear whether intermediate forms of teeth are to be found in nests, or whether it is to be understood that three distinct races exist in colonies, each being thus constituted for the performance of distinct functions. Mr. Smith stated that he had entered into correspondence with Mrs. Treat, and hoped shortly to obtain further information.

Mr. Alexander A. Berens exhibited a pair (male and female) of *Thestor Mauritanicus*, Staud., taken on the Atlas Mountains, in Algeria, in April.

Mr. M'Lachlan exhibited a coleopterous larva (probably a Buprestis or Longicorn) belonging to the tribe known as "coffee-borers," sent from Zanzibar by Dr. Kirk. He also exhibited a portion of a stem which had been bored into by the larva, and which was especially remarkable on account of the presence of a series of holes nearly equidistant, and bored in a direction perpendicular to the main gallery. These holes, which opened a communication between the inner gallery and the outer air, were of a conical shape, the inner opening being the widest, and Mr. M'Lachlan suggested that they were made by the insect for the purpose of ventilating the gallery.

Mr. Smith remarked that he had bred numbers of a Longicorn beetle (*Saperda populnea*), and had frequently observed in the shoots of the aspen,

in which the insect undergoes its transformations, similar small holes, which in this case are made by a parasitic Hymenopterous insect.

Mr. W. C. Boyd exhibited a specimen of *Pterophorus latus*, taken at Deal in June, 1869. He stated that the specimen agreed very closely with the continental *P. latus*, as does another specimen taken at the same place by Mr. Purday in 1877, but that it differed from the species taken in Norfolk by Lord Walsingham (two specimens of which were exhibited for comparison), which had been returned by Prof. Zeller as being "probably *P. latus*."

The Secretary read a paper, communicated by the Rev. T. A. Marshall, "Notes on the Entomology of the Windward Islands," in which the author gave a list of the species which he had captured in Barbadoes, Martinique, and Antigua since June, 1877, together with remarks on habits, and descriptions of new species.

The Rev. H. S. Gorham communicated "Descriptions of new Species of *Cleridæ*, with Notes on the Genera and Corrections of Synonymy."

Dr. D. Sharp communicated a paper "On some *Nitidulidæ* from the Hawaiian Islands."

The Secretary read a paper, by Mr. J. P. Mansel Weale, entitled "Notes on South African Insects," and exhibited drawings made by the author in illustration. The paper related to insects found on *Acacia horrida*, and protected by resemblances to various parts of that tree; species resembling birds' excrements, and also some remarkable cases of mimicry of ants by spiders of the genus *Salticus*, were likewise referred to.

Mr. Wood-Mason exhibited and made remarks upon the insects referred to in the foregoing paper, and supplied the names of the *Mantidæ* and *Phasmidæ*. He also suggested that the resemblance of a *Mantis* to bird-droppings might be of use to the insect for purely aggressive purposes, since flies were known to be attracted by such droppings. In conclusion, Mr. Wood-Mason mentioned a case of mimicry of ants by spiders which he had observed in India.

Mr. Meldola stated, with reference to the imitation of ants by spiders mentioned by Mr. Mansel Weale, that in his belief the remarkably interesting cases made known in the present paper could be better explained as instances of aggressive mimicry by the spiders for the purpose of obtaining food. There is no reason to suppose that the ants are themselves free from persecution by insect foes; thus it would be no advantage to the spiders to resemble them for mere protection. It is stated that the ants visit the trees for the purpose of feeding on the sweet secretions, and that large numbers of flies are attracted with the same object. Now the ants are not predatory on the flies, and can thus mingle with the latter without causing alarm. The spiders by mimicking the ants would thus be enabled to obtain an abundant supply of food, and, not being actually a foe to the ants, would

be allowed to live with them on the friendly terms mentioned by the observer.

Mr. A. H. Swinton communicated a paper "On Display and Dances by Insects."

Mr. J. W. Slater communicated a paper "On the Secondary Sexual Characters of Insects."

Part V. of the 'Transactions' for 1877, containing index, title-page, &c., was on the table.—R. MELDOLA, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Rodents of North America. By ELLIOTT COUES and J. A. ALLEN; forming Vol. XI. of the Report of the United States Geological Survey of the Territories. F. V. HAYDEN, U.S. Geologist-in-charge. 4to, pp. 1100. Washington, 1877.

THE liberal aid which is given to Science by the Government of the United States affords an example which the Government of this country would do well to imitate. By defraying the cost of printing important scientific works, the limited sale for which might deter most publishers from undertaking their publication, the State confers an inestimable boon, not only on students, but on the whole scientific world at large.

The volume before us, which has been brought out under the auspices of the American Government, is one of the most important of the series that has yet appeared. It may be described as a very careful Monograph of the Rodents of North America, and from the well-known zoological ability of the authors it will assuredly form a text-book for all students of American Zoology.

A contemporary thus ably epitomises the contents:—"The classification adopted by the authors divides the order *Rodentia* into two well-known sub-orders, *Simplicidentati*, with two, and *Duplicidentati*, with four, incisor teeth in the upper jaw, the latter including the *Leporidae*, or true Hares, and the *Lagomyidae*, 'Pikas,' or Calling Hares, both of which families are treated by Dr. Allen. Of the nine families into which the much larger group of the *Simplicidentati* is divided, the *Muridae*, *Zapodidae*, *Sacomysidae*, *Haplodontidae*, and *Geomysidae* are described by Dr. Coues; and the *Sciuridae*, *Castoridae*, *Hystricidae*, and *Castoroididae* by Dr.

Allen. Of these groups the *Zapodidæ* constitute a family established for the reception of a single species—the Long-legged Mouse or Jumping Mouse, originally described as a Jerboa, under the name of *Dipus hudsonius*, but which, according to Dr. Coues, exhibits characters distinguishing it quite as much from the true *Dipodidæ* as from the *Muridæ*. The family *Castoroididæ* is a new one, proposed for the reception of the great extinct Rodent, *Castoroides ohioensis*, the remains of which have been obtained from post-tertiary deposits in various parts of North America. This animal, which was about the size of an adult black bear, was long supposed to have been a gigantic beaver. Dr. Allen, however, places it in the Hystricine group. It is the largest known Rodent, except an extinct Capybara (*Hydrochærus*) described by Lund, from the Brazilian Bone Caves.

“Each of the above families is treated monographically, its position in the system being discussed, its genera and species, and the habits of the latter, described, and its bibliography given. Under some of the families, the extinct North American species belonging to them are noticed, and in an appendix Dr. Allen gives a list of the known extinct *Rodentia* of North America, with short notices of those not referred to in the monographs. A second Appendix contains a valuable bibliographical list of works relating to North American Mammals, by Dr. T. Gill and Dr. Coues; and the volume is illustrated chiefly with wood engravings of the skulls of *Muridæ*.”

The Fur-bearing Animals: a Monograph of the North American Mustelidæ. By ELLIOTT COUES. 8vo, pp. 348. Washington, 1877.

THIS is another of the American Government publications, of smaller size than the work last noticed, but of no less importance and value. It forms Volume VIII. of the ‘Miscellaneous Publications’ issued by the U.S. Geological Survey Department, under the able superintendence of Dr. Hayden, and, relating as it does to a group of animals on which a large majority of mankind are more or less dependent for warm covering, it may be said to possess a greater interest for the general public than most scientific works of the kind usually do.

In this volume the fur-bearing animals dealt with are those belonging to the family *Mustelidæ*, of which North America appears to possess nine—the Wolverine, Martens, Weasels, Skunk, Badger, Otter, and Sea Otter. These animals are all described in scientific form, and the descriptions are accompanied by a complete *résumé* of all the particulars relating to the natural history of the animals, which have been accumulated by a long series of observations on the part of the zoologists of the United States upon the species living within their range, and by the perhaps somewhat interested remarks of the hunters and trappers, who are, to a considerable extent, dependent on their knowledge of the habits of the animals for the successful prosecution of their trade. In fact, the volume furnishes an admirable monograph of the North American species of the carnivorous family of which it treats. The osteological characters, and especially the cranial peculiarities, which appear to be of special importance, are fully described, and the latter are illustrated by twenty plates containing sixty figures.

The account which is given of the Ermine, and of the change of colour in its fur which takes place at the approach of winter, is extremely interesting. Of the two species of Marten which are found in North America, both are considered by the author to be distinct from the Pine Marten and Beech Marten of Europe. In order to institute a proper comparison between these two latter animals and *M. americana*, Dr. Coues has given a full account of all three, embracing the synonymy, and a description of the skull and teeth of each, illustrated by woodcuts.

This leads us to observe that the present volume, although dealing with American mammals, possesses more than usual interest for British zoologists, since they will find in it much valuable information concerning animals which may be found in their own country.

The Moor and the Loch: containing Minute Instructions in al Highland Sports. By JOHN COLQUHOUN. Fourth Edition, enlarged. 2 vols., 8vo. Edinburgh and London: Blackwood and Son. 1878.

SPORT and Natural History are so intimately connected that it is difficult to conceive how a man can be addicted to the one

without also cultivating a taste for the other. And yet how many books on sport have been published by writers who have had no pretensions to the name of naturalist. Where attention is confined to a particular branch of sport, as Tiger-shooting, Fox-hunting, Salmon-fishing, and the like, this is perhaps of little moment, although it must be apparent that a knowledge of an animal's haunts and habits, time and manner of feeding, and the nature of its food, gained by a study of its natural history, must be of considerable advantage to the sportsman who intends to be successful. But with writers who treat of the general subject, or recount the result of their travels or excursions in little-known countries, the case is different. Either from necessity and for food, or from choice and for amusement, they come in contact with such a variety of game, both four-footed and winged, that to avoid confusion and misunderstanding, some precision in identifying and describing the different species is absolutely necessary. It is needless to say that this precision is only to be gained by a study of Natural History, and the want of it has considerably depreciated the value of many a well-written and otherwise entertaining book on sport and adventure.

Books of the kind before us, therefore, may be divided into two classes: those penned by sportsmen who have some acquaintance with Natural History; and those written by lovers of rod and gun, who have no knowledge beyond that which is requisite to fill their creel or game-bag.

Mr. Colquhoun's work is of the former class, and on this account has the more merit. Residing in a wild and extremely picturesque part of Scotland, in the midst of game of all kinds, with ample leisure for observation, and for sport in almost all its branches, Mr. Colquhoun has enjoyed opportunities which fall to the lot of few. A more favourable observatory for a naturalist than his home on the banks of Loch Awe, as he himself remarks, could perhaps scarcely be found. The crow of the Moorcock is heard from the window; the bell of the Roebuck, in the adjacent hanging wood, sounds close to the door; a good eye and glass may command the corrie of Ben Cruachan; infinite varieties of wild fowl crowd the loch, in winter, many of them rare arctic visitors; the salmon streams of the Awe and Orchy are within easy distance, and the mighty *Salmo ferox* roams the shore for miles.

Thus favourably situated, it is not surprising that Mr. Colquhoun,

in an experience extending over forty years, should have acquired a fund of sporting anecdote and Natural-History lore, of which probably the work before us gives but a small sample.

The fact of the book having reached a fourth edition, and having doubled its original size (the present issue being in two volumes instead of one), is of itself almost enough to disarm the critic, although the mere fact of a book passing through several editions is not always to be viewed as an indication of merit. In the present case, however, the author has laid himself open to very little criticism, and in one chapter only does he appear to have got at all out of his depth. This is the chapter on Hawking, in the second volume. Had he confined his remarks in this chapter to the account which he gives of a day's partridge-hawking in Dumbartonshire, no exception could possibly be taken, for his description is that of an eye-witness, the falconer being a gamekeeper and former pupil of old John Anderson, of hawking memory. But when, by way of preface to this narrative, he attempts a notice of the different hawks used by falconers, he makes half-a-dozen mistakes in almost as many lines. Had he possessed any personal knowledge of the subject, or even a slight acquaintance with its literature, he would not have committed himself to such misstatements as that the young male of the Goshawk is the Falcongentil, "and was once thought a distinct species"; that the Gurfalcon is "rather less than the gentil"; and that "these are rare in Scotland, although they occasionally build in some parts, particularly in the northern islands"!

In other chapters such slips as these do not occur, for the simple reason that Mr. Colquhoun has made sure of his facts by personal observation. His first volume deals with Deer-stalking, Roe-hunting, Seal-shooting, and the pursuit of Capercaillie, Grouse, Ptarmigan, Woodcock, Snipe, and Wild-fowl, in the details of which the author has judiciously mingled much practical advice with the narrative of many a sporting incident. On this account, to a sportsman, his chapters are eminently readable and entertaining.

A considerable portion of the second volume is devoted to Fishing in all its branches on loch, sea and river, but the earlier chapters are occupied with some account of the various wild animals which the author has met with in the course of his rambles, as the Marten, the Wild Cat, the Otter, and Badger.

We are at a loss to know how Mr. Colquhoun came to form the opinion that the Marten is not indigenous to the British Islands. At page 165 he says, "this beautiful creature is, as I have stated in a previous chapter (p. 79), an importation from the forests of America"!

This is evidently a misapprehension. Not only would it not be difficult to find evidence of the existence of Martens in the British Islands long before the discovery of America (according to Sir Robert Gordon* they were found in Scotland prior to 1630), but the American Martens, of which there are two species, *M. americana* and *Pennantii*, are regarded by the best authorities as specifically distinct from ours:† and even were it otherwise, there would be no need to go to America for the origin of our British race, since both the Pine and the Beech Marten are generally distributed throughout Western Europe, occurring in France and Italy, inhabiting the temperate parts of Russia, and occurring also in the Crimea and Caucasus.‡ We believe the two forms to which the above names are applied are now generally regarded by zoologists as specifically distinct. Mr. Colquhoun considers them to be merely the sexes of one species.

Space does not permit us to examine the arguments which have been adduced in support of these different views, and we must therefore refer our readers to what has been stated thereon in the second edition of Bell's 'British Quadrupeds,' where the question of the specific identity or otherwise of the two forms is fully discussed, and the conclusion arrived at is that they are distinct.

In concluding our notice of Mr. Colquhoun's book, we may remark that the pleasant way in which he has mingled his observations on the habits of game and wild animals in Scotland with an account of his successful pursuit of them render it attractive alike to the sportsman and the naturalist.

* 'History of the Earldom of Sutherland.'

† Dr. Elliott Coues, in his 'Monograph of the Fur-bearing Animals of North America,' observes (p. 74):—"The material before me indicates, with little hazard of error, that the American form is specifically distinct from both the Beech Marten and the Pine Marten of Europe."

‡ See Lord Clermont's 'Guide to the Quadrupeds and Reptiles of Europe,' p. 58.

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THE ROOKS AND ROOKERIES OF LONDON, PAST AND PRESENT.

BY EDWARD HAMILTON, M.D., F.L.S.

WITH the exception of the ubiquitous House Sparrow, no birds frequenting our London parks and trees are so familiar to us as our black-coated friends the Rooks, or, as they are commonly but erroneously called, Crows. Winter and spring, summer and autumn, they may be seen stalking about searching for food, confident in their security, claiming friendship with man, yet wary withal, for they never allow too near an approach. Never disturbed by crow-boy or gun, their progeny protected and allowed to gain maturity, no rook-shooting parties to molest them, they are happy in the dust and turmoil of this overgrown city.

The Rook, indeed, is to the citizen what the Nightingale is to the countryman—the harbinger of spring; and there are few pleasanter sounds in nature than the harmonious cawing from the lofty elm which greets the ear at Eastertide. We never pass beneath a Rookery in early spring, or listen to the distant voices of our sable friends without being reminded of Longfellow's lines in 'The Birds of Killingworth':—

“Do you ne'er think what wondrous beings these?
Do you ne'er think who made them and who taught
The dialect they speak, where melodies
Alone are the interpreters of thought?
Whose household words are songs in many keys
Sweeter than instrument of man e'er caught!
Whose habitations in the tree tops even
Are half-way houses on the road to heaven!”

Alas! the Rooks and Rookeries so pleasant to old Londoners are gradually diminishing and disappearing, and the London Rook, to our grandchildren, will be a bird of the past. The cause is not far to seek. The extension of buildings limits their feeding ground, and they have farther and farther to go to seek sustenance for themselves and their young. The Parks are now so cut up with walks and so frequented, that the birds can find but little repose and but scanty subsistence. When the writer first came to London the elms in Hyde Park and Kensington Gardens were in the finest condition. Herds of Fallow Deer frequented the glades, and there was only one walk across Hyde Park from where the Marble Arch now stands to the Wellington Statue. All the rest was luxuriant grass, affording abundant food for birds and beasts. "*Tempora mutantur!*"*

Beginning westward, the first Rookery to notice is that in the grounds of Hollaud House, one of the most ancient in the land. The trees bordering the high road were formerly covered with nests; now there are only four, and thirteen more in the avenue. In the days when Addison wrote, and in later days, when Sheridan, Jeffery, Byron, Brougham, Lyndhurst, Tom Moore, Macaulay, and a host of other wits and celebrities passed under that grand avenue to the splendid hospitality of that glorious mansion, the Rookery was in its prime. Those great names are reminiscences of a great time in England's history, and are now of the past, and so soon will be the Rooks and the Rookery.

A colony of Rooks has existed for many years in the high trees in the north part of Kensington Gardens. This Rookery, in 1836, extended from the Broad Walk near the Palace to the Serpentine, where it commences in the Gardens, and there must have been very nearly one hundred nests. The Rooks were very busy and their voices very merry when our present gracious Queen first saw the light in the south-east apartments of Kensington Palace, on May 24th, 1819; and their descendants were as merry and as busy when her Majesty held her first Council on her Accession, in

* It is perhaps not generally known that in 1533 Rooks and Crows were so numerous, and were thought to be so detrimental to the farmers, that an Act was passed for their destruction. Every hamlet was to provide "Crow-nets" for two years, and the inhabitants were obliged at certain times to assemble and concert measures for the destruction of these birds.—ED.

that same Palace, on June 28th, 1837. Even now the younger scions of our royal family can hear the "caws" of the old and the feeble cries of the young Rooks, descendants of the old colony, now, alas! reduced to thirty-one nests, and confined to a few of the upper trees skirting the broad walk near the North Gate.

A few years ago a pair of Rooks took possession of the plane tree in the grounds of the Deputy Ranger of Hyde Park. The colony increased, and numbered ten nests in 1870; dwindled again to two in 1874; increased to seven in 1877; and again diminished to two in 1878. Some new buildings have been erected close by: this may be the cause of the diminution at the present time.

A Rookery formerly existed in the Green Park, in the elm trees at the end of the garden belonging to the Green Park Lodge, the residence (if my memory serves me) of the late Princess Amelia. When the Lodge was pulled down some of the trees were also destroyed and the Rooks all left. The Rookery in Chesterfield Gardens then existed, but I think about this time the nests in Wharncliffe Gardens were commenced, and (as I suspect) by the Rooks from the Green Park which migrated from those trees.

If the great Lord Chesterfield could revisit the scene of his greatness here on earth, what would he see? His house remains, it is true, but in what desolation! The garden, described by Beckford as the finest private garden in London, entirely destroyed and covered with modern mansions; the stately elms, with their sable inhabitants, all gone; the beautiful colonnade in the courtyard demolished; nothing but the mansion left, despoiled of all its beauty and significance! In those old elms above that old bulging wall in Curzon Street there were, in 1846, close upon fifty nests, and two in Lord Wharncliffe's garden. Now the trees are all gone and the Rooks too. The colony in Wharncliffe Gardens has increased from two to ten nests, which are at present confined to three or four plane trees behind the mansion. A year or two ago there were a few in trees in the outer garden.

In 1875 a Rook's nest was built and the young hatched in a tree at the back of Hereford Square, Brompton. The following year the birds with returned others, and ten nests were built in the fine elm and plane trees there, thus establishing a fine colony.

A Rookery formerly existed in the trees in the Gardens of Carlton House; but this was destroyed in 1827, when the trees

were cut down and the old house demolished, when the Rooks emigrated to a plantation at the back of New Street, Spring Gardens.

In the gardens of Brunswick House, in the New Road, opposite Devonshire Place, a colony of Rooks has been established for some years. I find from my notes that in 1840 there were twenty nests in the plane trees of Brunswick House, and five in the trees overhanging the New Road. In 1858 (an extraordinary mild season), on January 23rd, Rooks were building in the plane trees of Brunswick House fifteen nests. In 1876 I counted seventeen nests. This year, on April 15th, fifteen nests, which now occupy only three of the plane trees nearest the Regent's Park. The tree overhanging the New Road is untenanted, although in 1875 it contained a single nest.

In some plane trees in a garden on the east side of Gower Street are three Rooks' nests, and two others in a plane tree in the garden of No. 5, Gordon Place, Gordon Square.

There was formerly a considerable Rookery in the Temple Gardens, in the elms in the King's Bench Walk.* When they ceased to build there I cannot ascertain exactly. One of the porters tells me that he has been in the Temple, man and boy, between forty and fifty years, and he cannot remember any Rooks or nests there. In Goldsmith's time it was a flourishing colony. In his 'Animated Nature,' printed in 1774, he says:—

"The Rook, as is well known, builds in woods and forests in the neighbourhood of man, and sometimes makes choice of groves in the very midst of cities for the place of its retreat and security: in these it establishes a bond of legal constitutions, by which all intruders are excluded from coming to live among them, and none suffered to build but acknowledged natives of the place. I have often amused myself with observing their plan of policy

* The history of this colony is rather curious. It was founded in Queen Anne's time by Sir Edward Northey, the well-known lawyer of that period, who colonized the place with birds from his estate at Epsom. A bough was cut from a tree with a nest containing two young Rooks, and taken in an open waggon from Epsom to the Temple and fixed to a tree in the gardens. The old birds followed their young and fed them, and they remained and bred there. The following year a Magpie built in the gardens. Her eggs were taken, and those of a Rook were substituted, and in due course were hatched there. "It was a pleasant thought," as Leigh Hunt observes, "supposing the colonists had no objection. The Rook is a grave legal bird, both in his coat and habits; living in community, yet to himself, and strongly addicted to discussions of *meum* and *tuum*."—ED.

from my window in the Temple that looks upon a grove where they have made a colony in the midst of the city. At the commencement of spring the Rookery, which during the continuance of winter seemed to have been deserted or only guarded by about five or six, like old soldiers in a garrison, now begins to be once more frequented; and in a short time all the bustle and hurry of business is fairly commenced; where these numbers resided during the winter is not easy to guess, perhaps in the trees and hedgerows to be nearer their food. In spring, however, they cultivate their native trees; and in the places where they were themselves hatched they prepare to propagate a future progeny."

The birds whose habits are thus so graphically described must have been in the height of happiness, and in the bustle of their business, when poor Goldsmith was on his deathbed, and their voices may have been his funeral requiem when he was placed in his grave in the Temple burial-ground, on the evening of Saturday, April 9th, 1774, almost overshadowed by those elm trees—

"Where the Bat circled, and the Rooks reposed,
Their wars suspended and their councils closed."

Twenty-five years ago the Rookery in College Gardens, Doctor's Commons, still existed. Hone, writing of it in April, 1826, in his 'Every Day Book' (vol. i., p. 494), has the following anecdote concerning it:—

"Amongst the deliramenta of the learned, which have amused mankind, the following instance merits a particular rank. Some years ago there were several large elm trees in the College Garden behind the Ecclesiastical Court, Doctor's Commons, in which a number of Rooks had taken up their abode, forming in appearance a sort of convocation of aerial ecclesiastics. A young gentleman who lodged in an attic, and was their close neighbour, frequently entertained himself with thinning this covey of black game by means of a crossbow. On the opposite side lived a curious old civilian, who, observing from his study that the Rooks often dropped senseless from their perch, or as it may be said, without using a figure, 'hopp'd the twig,' making no sign, nor any sign being made to his vision to account for the phenomenon, set his wits to work to consider the cause. It was probably during a profitless time of peace, and the doctor, having plenty of leisure, weighed the matter over and over, till he was at length fully satisfied that he had made a great ornithological discovery, that its promulgation would give wings to his fame, and that he was fated, by means of these Rooks, to say, 'volito vivus per ora verum.' His goosequill and foolscap were quickly in requisition, and he actually wrote a treatise stating circum-

stantially what he had himself seen, and in conclusion giving it as the settled conviction of his mind that Rooks were subject to the 'falling sickness.' "

Few people, save lawyers and their clients, ever visit one of the quietest precincts in the city of London, *viz.*, Gray's Inn. Turning out of noisy Holborn or Gray's Inn Lane, the most perfect stillness suddenly prevails; another city seems to have arisen; quiet alleys and paved courts shut out the noise of the busy world; a solitary footstep—made still more solitary by its echo—breaks upon the ear. Can this be in the midst of London? Even so, and in that great Square the chief noise is the "caw" of the Rooks.

In the gardens of Gray's Inn may still be seen the largest Rookery in London. How long it has been established I have not been able to ascertain. The elm trees were planted by Lord Bacon. It was probably coeval with that of the Temple, and probably increased when the Temple Rookery was abandoned. Six years ago there were thirty-eight nests. Two years later some of the trees were blown down, others were cut down, and the Rookery was nearly annihilated; a few nests only remained on some plane trees. The Gardens having been kept very quiet, and all noisy children excluded, the Rooks are gradually returning, and this year, on April 28th, there were twenty-eight full nests with birds sitting, and four unfinished. On going round the garden I was informed that every morning one of the residents feeds the Rooks, and that often as many as eighty birds have been counted. Now as twenty-eight nests will only give fifty-six birds, the rest must come from a distance—probably the birds of a former year. Let us hope, from the care taken, that this Rookery will long flourish and increase. The gardens are beautifully clean, and the birds as glossy as if they made their nests one hundred miles from this smoky city.*

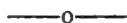
For some years a pair of Rooks built their nest in the plane tree at the corner of Wood Street, Cheapside. I have notes of this in 1835, 1836, 1837, and 1838. Yarrell says that they did not use the nest after 1836, but this is a mistake. Probably these birds were the same who built their nest previously on the Dragon of

* Some notes on the Rookery of Gray's Inn appeared in 'The Field' of the 17th and 24th April, 1875, and 26th February, 1876.—Ed.

Bow Church spire.* Mr. Harting, in his 'Birds of Middlesex,' states that in 1845 there were two nests in this tree. I have no record of this circumstance. The same author states that, in 1838, a pair of Rooks made their nest on the crown which surmounted the vane of St. Olave's Church, Crutched Friars.

I know of no Rookeries further East in London,—that is, "London proper,"—for we must exclude the outlying districts from our limits.

[There used to be some Rooks' nests in the burial-ground of St. Dunstan's in the East, in Tower Street; and in 1876 a pair of Rooks took up their quarters and built their nest in Bermondsey Churchyard.—ED.]



ON THE REPORTED OCCURRENCE OF A GARE-FOWL IN THE FÆROES.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

WHEN on a visit to the Færoe Islands in 1872, I heard that an uncommon bird had been killed more than a year previously in the neighbourhood of Porkere, in the island of Suderoe. After talking the matter over with Herr H. C. Müller in Thorshavn, he gave his opinion that the description which had reached him of

* During the rough weather of November last the dragon-vane of Bow Church was so bent and damaged by the wind that it not only ceased to work properly, but became positively dangerous. This being the case, it was determined to take it down for repairs; and the work was entrusted to Messrs. A. Proctor & Co., engineers and lightning-conductor makers. The height of the spire is 220 feet (some eighteen feet more than the Monument on Fish Street Hill) and the length of the vane is eight feet six inches. Ladders were placed close against the building and secured by a spike at the top; the second ladder being then hoisted from the first with a block and rope, the foot being well secured to the top of the other, and the second made fast as before, and so on until reaching the top. Three ladders were used to get to the vane from the top balcony of the church. Mr. Proctor and his men were assisted by one John Ives, of Huddersfield, who has had many years' experience, and who climbed twenty feet of the naked spire, there being no holdfasts or anything to assist him, and drew the ladder up after him. A stage was then erected about three feet below the ball, upon which a derrick was placed to lift the dragon from the spindle. After everything was ready there was a delay of several days owing to the violent winds making it dangerous to attempt the work of removal. This, however, was safely accomplished on the 23rd November, and about three weeks afterwards the dragon and ball, having been repaired and re-gilt, and the spire itself re-pointed, they were successfully replaced by the same means as had been employed for their removal.—ED.

this bird agreed so well with what might be given of the Gare-fowl, *Alca impennis*, that he considered it worth the while of some qualified person to proceed to Suderoe and investigate the matter.

Being desirous of examining the coal-beds (lignite) of Suderoe, the additional prospect of obtaining information about a rare bird added zest to my wishes, and a journey of a fortnight, during which I visited the islands of Sandoe, Skuoe, Great Dimon, as well as Suderoe, was the result.

On arriving at Porkere, in Suderoe, towards the end of May, 1872, I made enquiries about the rare bird that had been shot there; but only elicited that an uncommon bird, a Rook (*Corvus frugilegus*), had been procured the previous winter. Being almost ignorant of Danish, and knowing nothing of Færoese, I was certainly not a competent person to institute an enquiry amongst people who had no acquaintance with English.

After my return to Thorshavn, on mentioning the result of my researches to Herr Müller, he was not satisfied that I had got to the bottom of the matter, and he agreed to make further enquiries through the Sysselmand (magistrate) of Suderoe.

In the following year (1873) a deposition was made before the Sysselmand of Suderoe by the parties who killed the bird, supposed possibly to have been a Gare-fowl (*Alca impennis*); and Herr Müller kindly sent me a copy of the document in question, which I received just prior to my embarkation for foreign service, in 1873. However, being placed on one side, it escaped my memory until a few days ago, when it accidentally turned up.

Though fully five years have elapsed since the deposition was made, I think it is deserving of record, not because it is in itself satisfactory evidence of the appearance of the Gare-fowl of late years in Færoe, but because it is a statement which, in all probability, will be handed down as a tradition in those islands of an actual capture of a Gare-fowl, and our successors may lament the apparent want of energy on our part in not having thoroughly investigated the circumstance at the time. I therefore, without further apology, append a translation of the deposition.

[TRANSLATION.]

"I, the undersigned Jacob Müller, of Porkere, hereby declare, according to truth, that one day in the month of November, 1870, when in company

with Morten Nygaard, also of Porkere, I was out in a boat off Porkere-næs, for the purpose of shooting, and killed a bird that was swimming on the sea.

"In appearance this bird was like a young 'Alka' (Razorbill, *Alca torda*). The beak was more like that of an 'Alka' than that of a 'Lomvia' (Guillemot, *Uria troile*). The length of the beak was that of the 'Lomvia.' It had at least one spot above each eye. The body was shorter, but about as broad as a young 'Havgaas' (Great Northern Diver, *Colymbus glacialis*). The bones in the thigh were like those of the 'Havgaas'; the feet were like those of 'Lomvia,' but light coloured on the under side, black on the upper. The bird weighed 5 lbs. Danish ($5\frac{1}{2}$ lbs. English).

JACOB MÜLLER.

"The above facts are testified to.

MORTEN NYGAARD.

Porkere, 27th May, 1873.

"Witnesses—G. EFFERSO.

JOHAN LARSEN."

It will no doubt strike the reader, as it has the writer, that no reference is made to the wing of the bird, which in the case of a Gare-fowl would surely have at once attracted attention. The deposition of the two Færoese fishermen and cragsmen was made without any prompting or suggestion, and it is possible that when describing the bird as like a young Razorbill they implied that the wings were not developed. That the bird was not *Colymbus glacialis* or *Colymbus septentrionalis* is positively certain, for the Færoese fishermen know these species accurately, as well as all others commonly frequenting their islands.

Of one thing I am certain, namely, that if the bird shot and probably eaten by Jacob Müller of Porkere, was not a Gare-fowl, it was a strange visitant, and sufficiently uncommon to attract the special attention of the two men. Everyone who has had the opportunity of mixing with the simple-minded, truthful inhabitants of Færoe will agree with me that such a statement as is here printed would not have emanated from the source it has without some good reason.

In 'The Zoologist' for November, 1872 (pp. 3280—3285), the reader will find all the information which I could collect concerning the Gare-fowl in the Færoes to that date. The above may now be added by way of supplement.

THE MAMMALS OF SHAKSPEARE.

BY HENRY REEKS, F.L.S., F.Z.S.

(Continued from p. 173.)

THE WILD CAT, *Felis catus*.

Although once abundant in our woods and forests the Wild Cat is now nearly extinct, the few which still survive being confined to the mountainous parts of Scotland and North of England. This is as it should be: we can quite dispense with this rapacious feline in our well-kept and well-stocked woods in the South. A few weeks since a writer in 'The Field' mentioned that he had seen some old paintings or prints of "Hunting the Wild Cat"; but I imagine that it was never considered "royal" sport, otherwise it would for a certainty have been attended to by Shakspeare, who was apparently well acquainted with the habits of the animal. In allusion to its preying by night and sleeping by day, he makes Shylock say—

"He sleeps by day
More than the Wild Cat."

Merchant of Venice. Act ii., Scene 5.

When roused to fury perhaps no animal of its size is comparable to the Wild Cat for pluck and savageness. Mr. St. John, in his 'Highland Sports,' gives an interesting account of a fight with one of these savage brutes, which sprang straight at his face when six or seven yards distant, and had he not struck her in mid-air she would certainly have done him some serious injury. Mr. St. John adds that "if a tame cat has nine lives a wild one must have a dozen"!

In *Taming of the Shrew*, Act ii., Scene 1, Shakspeare makes Petruchio say—

"Thou must be married to no man but me;
For I am he am born to tame you, Kate;
And bring you from a Wild Cat to a Kate
Conformable, as other household Kates."

THE LYNX, *Lyncus virgatus*.

The Pard, or Mountain Cat, is frequently mentioned by Shakspeare, but I know not to what animal the poet refers, unless it be

to the Lynx. In Newfoundland the Lynx, *Lyncus canadensis*, is invariably called the "mountain cat." Some authors identify the "pard" with the Leopard, or any spotted feline; but the following quotation from *As You Like It*, Act ii., Scene 7, can scarcely apply to the Leopard:—

"Then a soldier,
Full of strange oaths, and *bearded* like the pard."

On the other hand, it is doubtful whether the Lynx would be sufficiently strong to kill a deer; therefore, in the following extract, perhaps Shakspeare alluded to the Leopard:—

"As fox to lamb, as wolf to heifer's calf,
Pard to the hind," &c.
Troilus and Cressida. Act iii., Scene 2.

THE CIVET, *Viverra civetta*.

This well-known animal is an inhabitant of tropical Africa. Some authors state that it is also found in Madagascar, but I believe that the Madagascar Civet is not only a different species, but is referred even to another genus, and is peculiar to the island.

The Civet, often miscalled "*Civet Cat*," has for generations been a favourite sign for perfumers. Two hundred years ago a Dutchman wrote the following lines under the painted sign of a Civet:—

"Dit's in de Civet Kat, gelyt gy kunt aanschouwen,
Maar komt hier binnen, hier zyn parfuimen
Voor mannen en vrouwen."*

Formerly the substance procured from the pouch of the Civet, and which is now only used as a scent, was considered a panacea of great efficacy in certain complaints; for this purpose it appears to have been in request in Shakspeare's time:—

"Give me an ounce of *civet*, good apothecary, to sweeten my imagination: there's money for thee."

King Lear. Act iv., Scene 6.

The "musk" of the Civet was in those days very expensive, and

* 'History of Signboards,' p. 162.

could be used only by the wealthy in such an extravagant way as scent: hence only

“The courtier's hands are perfumed with civet.”

As You Like It. Act iii., Scene 2.

In *All's Well that Ends Well*, Act v., Scene 2, the Civet is called a “musk-cat.”

THE WOLF, *Canis lupus*.

There are few animals that have got a worse name, and perhaps deservedly so, than the Wolf. Individually it is one of the most cowardly of animals, but collectively it proves one of the most dangerous among wild animals; in fact, I believe a hunter would run a greater risk of “getting the worst of it” from a pack of hungry wolves—and wolves are *always* hungry—than from a troop of lions. The latter may be easily avoided unless the hunter courts a fight; but not so with the wolves. Keen-sighted and remarkably fleet of foot, they at once commence the attack, not always openly, but generally so. In Newfoundland I have known them display considerable strategy in the capture of the Cariboo (*Rangifer caribou*). In autumn, when the hills are covered with snow, the deer come down to feed in the marshes, many of which, although of considerable extent, are surrounded by belts of conifers, chiefly the black spruce (*Abies nigra*), through which the deer have well-known and well-trodden paths. In the leeward paths some of the wolves hide themselves, while others run round to windward of the deer, which is generally sufficient to start a whole herd to leeward at full speed, and consequently right into the jaws of the secreted wolves. The settlers affirm that the wolves generally adopt this easy manner of hunting the Cariboo just after the bucks have shed their horns. On one occasion I measured the “strides” of a couple of wolves that had passed close by the door of my house during the night in chase of a Cariboo stag, and found them to be from sixteen to eighteen feet! Imagine clearing the locks of a canal, barge, bargemen and all at every stride, and going at racing speed.

Well does Shakespeare bring out the true character of the wolf when he makes Antonio say:—

“I pray you, think you question with the Jew:

You may as well go stand upon the beach,

And bid the main flood bate his usual height :
 You may as well use question with the wolf,
 Why he hath made the ewe bleat for the lamb," &c.

Merchant of Venice. Act iv., Scene 1.

And again Antonio's friend Gratiano says of Shylock :—

"Thou almost mak'st me waver in my faith,
 To hold opinion with Pythagoras,
 That souls of animals infuse themselves
 Into the trunks of men : thy currish spirit
 Govern'd a Wolf, who, hanged for human slaughter,
 Even from the gallows did his fell soul fleet,
 And, whilst thou lay'st in thy unhallow'd dam,
 Infus'd itself in thee ; for thy desires
 Are wolfish, bloody, starv'd and ravenous."

Id.

Shakspeare mentions the wolf upwards of fifty times, but it is unnecessary to give further quotations.

(To be continued.)

CORRECTION OF AN ERROR.—At p. 167, for "the old belief in cows being *suckled* by hedgehogs," &c., read "*sucked* by hedgehogs."



OCCASIONAL NOTES.

FAUNA OF THE LAKE DISTRICT.—With reference to a remark of Mr. W. A. Durnford (p. 121) as to the absence of Quail in the Lake District, I may say that some years ago I heard of a bevy of Quail being seen in September at Urswick, near Ulverston. They may possibly have been bred in the district, but I never heard of their having been seen except upon that occasion. In the Fylde District, between Lancaster and Preston, single birds were a few years ago not very uncommon, and on several occasions I have myself seen them when shooting in that district. Last autumn, however, on enquiring of the keeper, he told me he had not seen a single bird during the last two seasons. In the higher part of Furness black-game are by no means rare, though certainly not in anything like the number they are in the south of Scotland, perhaps owing to the very little grain grown in the hill parts of Furness. Grouse in some localities are fairly plentiful. The Dotterel used, at one time at all events, to breed on Saddleback (the next mountain to Skiddaw), and the

last time I ascended that mountain (which, however, is some years ago) I caught a glimpse (there being a thick mist at the time) of one running amongst the short bent just ahead of us. During the winter the Common Scoter (locally called "doucker") is very plentiful in Morecambe Bay, and on one occasion I shot a bird of this species on an inland tarn two or three miles from the sea. At high tide, especially in wild weather, large flocks of the common Wild Duck collect in the bay to the seaward side of the embankment of the Ulverston and Lancaster Railway, just where it crosses the estuary of the Leven, and apparently they pay but little attention to the passing trains. The Goldeneye is often seen during hard weather on the inland ponds and tarns, and a few years ago I shot a Tufted Duck on the Leven, which runs out of Windermere. That Woodcocks breed in the district is undoubted, nor do I think the fact at all exceptional, as they may frequently be seen on a summer evening in High Furness flitting past in the twilight. This particular portion of the district is almost an unbroken area of coppice-wood, and for this reason, as it seems to me, all endeavours to get up any considerable head of Pheasants have hitherto proved useless, as the birds have so far to run to reach any open cultivated space either for natural food or for sunning purposes. The Common Buzzard I have seen in Eskdale, and there also I have known the Marten (locally called "sweet mart," in contradistinction to the "foul mart," *i.e.* Polecat) to be trapped. The only instance I ever heard of a Badger being seen in this district was some years ago when one was run over by a train on the Furness Railway near Broughton. Hill Foxes are plentiful enough. Otters fairly so. Last year there was one of the latter which varied its scene of operations a good deal, sometimes choosing the Leven, sometimes the Crake, or the brook running down Rushand Valley. I do not think Woodcocks make their appearance here in autumn in anything like the numbers they did formerly. I remember, when a boy, an old farmer telling me he had in one season snared sixty with a "spring" set in the soft bottoms. Last season they were, however, rather more plentiful; but probably, as high farming progresses, increased drainage will still further lessen their numbers. Quantities of eels are caught every autumn in a fish-coop at a mill on the Leven. This migration from the lake only lasts a short time, during which I understand immense quantities come down the river; but the moment that the first snow whitens the tops of the highest hills the movement is suddenly and mysteriously checked.—EDWARD T. BALDWIN (Woodcroft, Ulverston).

GOATS EATING YEW.—From personal experience I am able to state that I have frequently seen goats eat yew with impunity. For many years I kept goats with my cows, but they used to get into my shrubberies and

eat everything they could reach, even the tall hemlock stalks. Notwithstanding what Gilbert White says (*vide* p. 177), it is quite a mistake to suppose that deer and sheep can do so without being poisoned. A friend of mine lost, I think, twenty-five ewes from eating the clippings of a yew hedge, and I have heard of certainly more than one instance of deer being poisoned from the same cause. It always seemed to me extraordinary that goats, which, through the antelopes, are perhaps more nearly allied to deer than to sheep (both of which, however, suffer), should be able to eat such a dangerous poison with impunity; but I remember a friend telling me that a species of goat in the Jardin des Plantes once ate all the tobacco in his tobacco-pouch! Two years ago some young friends of mine tied their donkey to one of my yew trees, and it ate a few twigs before I could get to move it, and died in less than three hours. In all cases of yew-poisoning that have come to my knowledge the tree was the common yew, *Taxus baccata*.—HENRY REEKS (Thrupton).

GOATS EATING SERPENTS WITH IMPUNITY.—Having had occasion lately to go carefully over the old ‘Statistical Account of Scotland,’ and extract all therein of interest relating to mammals and birds, I find that goats seem to be proof against snake-bites, according to the reverend author of the “Statistical Account of the Parish of Kirkmichael, in Banff,” the Rev. John Grant. I do not find any reference to the fact of goats eating yew trees or yew-tree leaves or berries (*vide anteà*, p. 177). The passage, which occurs in vol. xii. (1794), p. 449, runs thus:—“Goats eat serpents without any injury from their bites. Hence the Gaelic proverb, ‘Cleas-na gooiths githeadh na nathrach’—*i. e.*, ‘Like the goat eating the serpents.’” If this indeed be the case, it may be worthy of the attention of those who own islands infested with adders, such as some of the islands on our Scotch fresh-water lochs, on some of which I am informed over one hundred “serpents” are sometimes killed in one season.—J. A. HARVIE BROWN (Dunipace House, Larbert, N. B.)

CORRECTION OF AN ERROR.—In my notice of the Beech Martin in Cornwall, in the April number of ‘The Zoologist,’ p. 127, twentieth line, and the last word of the line, for “lose” read “love.”—E. H. RODD (Penzance).

PORPOISES IN THE THAMES.—On the 8th, 9th and 10th of May Porpoises were observed in the Thames, especially below Greenhithe. On the 11th, about half-past six o’clock, several were seen between Waterloo and Charing Cross Bridges, disporting themselves in the river. Two of them were swimming near the Thames Police river-station, Waterloo Pier. They were going with the flood-tide, and frequently rose to the surface of the water for air. Porpoises had not been seen as far as Westminster Bridge for two

years past. In May, 1876, one was captured on the Surrey side of Hungerford Bridge, and its carcase was sold and exhibited in the New Cut. Another was shot about the same time near the Cherry Garden Pier, Rotherhithe.—‘*The Times*,’ 13th May.

[Mr. Lionel Tennyson subsequently communicated to ‘*The Times*’ the fact that on May 13th he had seen a Porpoise in the Thames immediately below Barnes Bridge.—ED.]

THE SWANNERY AT ABBOTSBURY.—The perusal of the Rev. A. C. Smith’s graphic description of the Swannery at Abbotsbury, in ‘*The Zoologist*’ for December last, determined me to take advantage of a visit to Weymouth to inspect this celebrated colony. Mr. Smith’s description leaves little to be added, but I may perhaps be permitted to supplement it by a few scraps of information gleaned during my visit and in conversation with the ancient swanherd. I was informed by this authority that the total number of Swans now under his charge is fully 1300, of which he considered that nearly half were engaged in the duties of incubation at the time of my visit (25th April), in addition to some few stragglers which nested elsewhere, and a few late birds whose nests were still empty, but were not likely long to remain so. At the hour of my visit, between four and five in the afternoon, the Swans were on their nests, and the day being brilliant, the sight was a splendid one. On most of the nests the hen swan was sitting, whilst her mate was keeping his proud watch close by; but in a few instances the male bird had left his partner and had gone out into the “fleet” to feed, whilst in other, though I think fewer, cases the hen bird was absent whilst the male remained in charge. The swanherd told me that of about seven hundred cygnets hatched in 1877 very few had been reared except the two hundred brought up under nurses in the manner described by Mr. Smith. These nurses are hen swans which have hatched a brood of their own, to which the cygnets hatched by other mothers are added till the requisite number of twenty—which is considered as many as one nurse can attend to—is completed; but it is needful that the cygnets given her to adopt should be of the same age as her own brood, and that very young, otherwise she would destroy them. The young birds brought up by hand are principally designed for the table, and I can by no means concur in Mr. Smith’s view of a cygnet, well fattened and well dressed, being other than a first-rate dish. I was, however, informed that occasionally some of the cygnets thus artificially reared are released, when fully grown, for the purpose of keeping up the stock of old birds. Those cygnets which are left under the care of their parents are, for the most part, lost, as the swanherd told me, from their inability to obtain a sufficient sustenance from the weed growing in the brackish water of the “fleet.” This, he said, is now less

abundant than in former years and difficult to be reached by very young cygnets, which are, moreover, continually killed in the fights that occur between rival pairs of Swans, and which frequently assume the ignoble phase of slaughtering each other's offspring. An additional cause of destruction is the invasion of foxes, which come from a distance to prey upon the cygnets, though they do not usually attack the old Swans, one of which was, however, killed by a fox during the past winter. Whilst watching the snowy ranks of portly Swans sedately enthroned upon their nests along the marshy borders of the "fleet," I was amused at the contrast exhibited by a flock of about forty nimble Stints, *Tringa alpina*, that, with rapid and agile motions, were exploring its oozy brink close upon the quarters of some of the downy giants; and I was, moreover, surprised at the Stints being absent from their own nesting places so late as the 25th April, but as a smaller flock which flew past me, and of which I had a nearer view, exhibited in its full beauty the rich breeding dress of this charming Sandpiper, I concluded that the good example of the Swans would shortly be followed by their diminutive neighbours. I may add that the Polish Swan appears to be unknown at Abbotsbury, as the swanherd told me that he had never known a white cygnet hatched there.—J. H. GURNEY (Northrepps Hall, Norwich).

THE SPOONBILL IN DORSETSHIRE.—This handsome bird occurs occasionally at Poole. In fact, from my own observations, coupled with the information elicited from old puntsmen and fishermen, it appears that few years pass without a visit from one or more "Spoonbill Cranes," as they are locally termed. I had an opportunity of observing one myself in the early summer of 1876. The first time I distinguished the bird I was engaged in hammering my una-boat against the prevalent sou'-wester, from Poole to Wareham, at a place on the Arne shore called Turner's Ford. A large white bird was standing on the beach, too high on the legs for a gull. It was very wild, and took wing a long way out of gunshot. As it opened its wings I made out what it was, and, having a powerful glass with me, I ran the boat ashore to observe its actions more minutely. It flew rapidly round and round Wareham Bay, occasionally mobbed by gulls. After a somewhat protracted flight, during which greater powers of wing seemed to be displayed than those possessed by the slow-moving Heron, the bird approached the Heron's nesting-place at Arne, which is situated about half a mile from the shore in a clump of fir trees. On these trees a number of Herons were quietly enjoying the pleasant sunshine. Attracted, however, by the unusual appearance of the Spoonbill, they all rose screaming into the air to have a look at the stranger. Apparently satisfied, most of them then returned to their post of observation on the firs. Presently the white bird joined them, pitching upon a tree in their company. This was

apparently too great a liberty, for several of the birds immediately flew up and mobbed him, driving him from tree to tree, until, wearied out by their persecution, the poor bird took wing, and, after circling round the heronry for a time, as though loth to quit his unfriendly relations, mounting high in the air, disappeared over the Arne peninsula in the direction of Wych and South Bay, a more retired situation than Wareham Channel. This bird continued to resort to the harbour for a fortnight or more, but owing to the way in which the other birds mobbed him, or to natural wildness, finally departed, experiencing on one occasion a narrow escape from a pound and a half of bullets fired from a huge punt-gun! A more effectual shot at Spoonbills than that, however, was once made here by a gunner named Matthews. He fired his punt-gun at about fifteen of these birds on Patchin's Point and killed no less than five, for which he got, I believe, ten shillings a-piece—a good day's work for him. Another gunner named Orchard shot one, took it home and ate it. He told me that it was a very good bird, only rather too fat. A Spoonbill made its appearance here in June, 1877, the men about Wareham Bay insisting that it was the same bird that had come the year before. I did not happen to see it, but the one I saw was an immature bird with little or no crest. I forget the exact date of Matthews killing the five, but it was a good many years since—a dozen at least I should say. Most of the gunners here are acquainted with this bird, which shows that its appearance is tolerably frequent.—T. M. PIKE (Westport, Wareham).

PLOVER SHOOTING ON THE STIRLINGSHIRE COAST.—There are two ways in which Golden Plover may be shot singly in the low-lying fields adjoining the Firth of Forth, or upon the mud-flats beyond the sea-wall. Both ways afford beautiful shooting—none prettier or more satisfactory. The tide along our coast, on receding, leaves a vast extent of mud-flat, or “slink,” as it is locally named. When the tide returns it washes up against the sea-wall in spring-tides, or in neap-tides leaves a strip of greater or lesser width along shore of mud and shells, with, at certain points, patches or corners of salt marsh. About a gun-shot from the sea-wall, and close to the mouth of the River Avon, which separates Stirlingshire from Linlithgow, is a bank of sand and cockle-shells, which is only covered during unusually high tides. For ordinary shore-shooting from this bank the September tides are the most productive. When the tide is at the full, Plovers are frequenting the great open stretches of ploughed “carse-land” which extends for miles in a westerly and northerly direction reaching to Falkirk and Stirling. When the wind is southerly, or south-west, or north-west, they congregate at localities further inland; when easterly or northerly they prefer the fields nearer the sea-wall, although exceptions do occur to the above rule. At this time the shore-shooter must leave the sand-bank and the “slink,” and search

for his Plovers in the fields; by approaching a flock in a circular manner, not going directly towards them, he may obtain a company-shot for both barrels. These two shots put up other flocks, which wheel about for a considerable time before alighting. If the wind is westerly they often go straight away inland, and do not give another chance; but if easterly they wheel and turn many times before alighting. If the shore-shooter can with any degree of correctness imitate the call of the Plover, while the birds are thus wheeling about, the flock will often fly directly over his head within range, when a beautiful double shot may be had, the first barrel at a single bird as they float piping overhead, the second, as—with the fall of the first bird—the remainder of the flock dash down with tremendous impetuosity. Here is perhaps one of the very neatest shots that can be made. I have often single-handed killed from five to eight couple of Golden Plover, perhaps half of which were shot in this way. But when going specially for Plover, two guns are always better than one; because Plover—if their haunts and flights under different conditions of weather and wind are understood by both gunners—can often be almost driven; and here numerous opportunities are afforded of single shots, as the birds usually fly overhead in open rank. After an hour or two of this shooting, depending upon the time one arrives at the scene of operations, a return should be made to the sea-wall or to the sand-bank, or positions be taken up a little inland, opposite certain landmarks on the sea-wall, known to the local shore-shooters, and the shelter of a “stook” of wheat or beans sought for. Presently as the tide begins to leave about a hundred yards of mud-flat uncovered, a few Golden Plover—perhaps in twos and threes or small flocks—are seen skimming along close to the tide line, and all flying in the same direction; if the wind is northerly, flying north, towards the broad mud-flats which lie at the back of the long breakwater at Grangemouth; if southerly, flying south to the semicircular bay which lies between Avonmouth and Bo’ness. These small “trips” of Plover are the first to leave the fields, and have crossed the sea-wall at various points, some of which points must be known to the shore-shooter if he expects to have any shooting. If standing inland behind a wheat “stook” the shots one gets are somewhat similar to those obtained when the birds are frequenting the ploughed fields. They pass often just within long shot overhead, and a second barrel may sometimes be obtained as they dive downwards. If, however, the gun be stationed at the sea-wall the shots obtained are different, as the Plover upon approaching the sea-wall dash down and skim low over, at certain points, especially when a strong breeze is blowing off the east. It requires a sharp shot to get more than one bird at this station, and often before your single bird drops, the rest of the flock are out of shot, skimming away over the mud-flats. If, again, a gun be stationed upon the shell-bank,—hid, we will suppose, by an old tree-root washed down the Avon or the Forth and stranded, or even simply seated on

a shell-heap,—opportunities again occur of a double shot, as you see the Plover coming, but to kill a double here is also quick practice. On fine calm weather Plover, however, often come across the sea-wall at a great height, and do not lower until almost over the tide-mark, or at all events a good 100 or 150 yards beyond the shell-bank. At such times the shooting is seldom good, and the only plan is to get out upon the mud as far as possible, and keep a sharp look out for stray shots. Plover after their dive down over the sea-wall often separate and scatter over the mud, uniting their forces again as they approach the edge of the water. These scattered birds usually fly with great velocity, and sometimes twist and turn almost like Snipe. It seems, indeed, as if the very impetuosity of their headlong dive across the sea-wall had deprived them of the power of re-directing their flight, and as if the twists and turns were made in the effort to steady it again. Here is an opportunity for another kind of shot, and a very pretty one it is, too. Altogether, at least upon our coast, there is abundant diversity of shots at single birds to be had, and often, with or without a second gun, five or six couples may be bagged, and sometimes more, if one hits off just the right tides—just the right wind and weather. There is comparatively little written, I think, upon this part of the shore-shooter's experiences. It has always seemed to me to be of first importance for a successful day's Plover or shore-shooting, to have—*first*, the wind right; *second*, the tide right; and, *third*, the weather not with too much rain, or *vice versâ*, and with, later in the year, a certain amount of frost. If to this be added mist off the sea, keeping the birds from straying far inland, good sport may be looked for; but in misty weather birds "bunch up" more than they do in clear weather, as a rule.—J. A. HARVIE BROWN (Dunipace House, Larbert, N.B.).

THE NESTING HABITS OF THE WATER OUZEL.—The Water Ouzel, or, as it is more commonly called, the Dipper, is very frequently met with in the English Lake District, as also in many other parts of England, Scotland and Wales. It loves wild hilly districts, and especially rapid rivers fed by mountain streams. Here, amid the rocks and waterfalls, it may be observed, now flying, or rather darting, up or down the stream, and in its manner of flight resembling the Kingfisher and Sandpiper; anon sitting on a stone or rock in mid-stream, or, if in search of food, walking at the bottom of the stream in search of water beetles and other insects. It is a shy bird, and from its rapid movements very likely to elude observation. There can be no mistaking it, however, for any other species; its white breast, brownish black back, short tail, and feet so admirably adapted for walking on stones, cannot fail to distinguish it. Water Ouzels are early breeders; one year I saw no less than eight nests in the neighbourhood of Windermere; they were all built in April, and

I have known the eggs taken by the 9th of that month. They have three or four very favourite places for nesting in. By a waterfall, when the nest, which is large, bulky, and roofed over like a Wren's, is placed in a crevice of the rocks or stones, and though easily seen, generally very inaccessible; in a culvert or tunnel, when it is placed in a hole in the wall or roof; under a bridge, in a hole of the arch, and often near the water; and under an overhanging bank, when, from its position and build, it much resembles that of the Common Wren. It is generally composed of moss and leaves outside, and lined with finer material in the shape of bents and grass; the roof generally overhangs the entrance, which is difficult to see unless you stoop down. The nest is large and bulky; the eggs five, six, and sometimes seven in number, white and pointed. When built by a waterfall the bird seems soon aware of your approach, and is very likely gone before you can catch sight of her. When built in a culvert or tunnel, which I have found the favourite place, they will sit very closely. I remember noticing a pair of these birds flying about a rather large drain, about four feet high and four wide, which conveyed a small streamlet under a road into the river. Feeling sure the nest must be in this drain, I asked a friend who was with me to search. He did so, but in vain. On returning some hours afterwards to the same spot there was the bird again; so nothing remained but to have another search. In I went, and crawling up the small tunnel on hands and knees, I groped about in the side-walls, but without success; at length, putting my hand up to the roof, which was made by large pieces of slate laid across, I discovered a crevice between two slates, into which I could just squeeze my fingers, and there sure enough was the nest with three eggs in it. My brother came the following year to look, and there was a nest in the same place with the old bird in it. He caught her, and let her go; there were two eggs, which he left in the nest. Coming some days after, and feeling sure she would forsake her nest, he was surprised, on getting to the nest, to observe the bird fly off, and, apparently not at all alarmed, settle within two yards of him on a stone. The nest contained five eggs, which were allowed to hatch. I doubt not that the same birds or their descendants occupy the same snug and secure home every season, and rear one or perhaps two broods undisturbed. The flight of these birds is rapid and generally near the water. I have seen them, in August, get up from very small mountain streams on the moors in Scotland. They have a short, melodious and rather powerful song. Their cry of alarm is a short, shrill pipe, rather like that of the Kingfisher's. I never saw one settle on a tree or land, but generally on stones and rocks in the river.—HENRY GEORGE TOMLINSON (The Woodlands, Burton-on-Trent).

NESTING HABITS OF THE KINGFISHER.—Mr. Tomlinson is very accurate in his account of the breeding habits of this bird. They are, as he observes,

early nesters; last year I saw a nest with seven eggs in on May 1st, and this year on the 25th April I found another with the like number. I have usually found the nest three or four feet above the water, in a hole some eighteen to twenty-four inches in depth, invariably sloping upwards. The eggs are, I believe, always seven in number, and are deposited in a hollow at the end of the burrow, upon a quantity of ejected fish-bones, somewhat like isinglass. A small number of fish-bones will probably be found outside the hole, and very often the droppings of the old birds will be seen on the ground underneath a friendly perch. I have noticed that the hen bird sits very closely, and I have nearly always found her on the eggs when my hand reached the end of the hole. The nest I found on the 25th April last was situated in a bare bank, about four feet above the water, in a swift brook running through a "spinney." Some ivy hung over the bank and slightly concealed the nest. Just beside it, in a straight line with it, were three other Kingfishers' holes, all of which have, to my certain knowledge, been inhabited in past years. On enlarging the aperture I was surprised to find that the base of the burrow all the way up was thick with "mutings," and I at once concluded that the young had been hatched. However, on getting to the end, about eighteen inches, I felt the old bird. I pulled her out, smoothed her ruffled feathers, and let her fly. Upon nearly two handfuls of fish-bones were seven eggs, nearly round, and with a beautiful salmon-hue, the yelk showing through the thin shell. I never before knew the hole to be dirty before the young were hatched. Kingfishers could not, I imagine, construct a nest of entwined fish-bones; for the bones of "miller's-thumbs" and minnows, interlaced Magpie-fashion, would scarcely form a habitation large enough for the parent bird to sit on her eggs, let alone the space needed to contain seven young ones.—C. MATTHEW PRIOR (Bedford).

OCCURRENCE OF THE LITTLE CRAKE IN CORNWALL.—On March 21st I had the pleasure of examining, in the shop of a birdstuffer at Stonehouse, a specimen of the Little Crake, *Crex pusilla*, which had been captured a few days previously by a cat at St. Dominick, Cornwall. The person to whom it belonged stated that it was brought into the house by his cat, and seeing the bird was a stranger,—being well acquainted with the Corn Crake and Water Rail,—he took it away from the animal and brought it to Stonehouse to have it preserved and learn its proper name. This, however, the birdstuffer could not exactly tell him, never having seen a specimen of the kind before; but, happening to call in just at the time, I was able to decide the question. This example is fully as large, if not larger, than *Crex Baillonii*, and the few measurements I took of it are as follow:—Bill, from point to forehead, above three-quarters of an inch; wing, from carpal joint to end of longest quill, four inches, full—first quill

equal to the sixth; tarsus, one inch and three-eighths; middle toe and its claw, one inch and five-eighths. The extreme length of the bird could not well be taken, as the tail had been pulled out. Colour:—Bill, greenish yellow; base of upper mandible darker; legs, green; top of the head, dark olive-brown; back of neck lighter; centre of back, black, the edges and tips of many of the feathers being marked with stripes, rather than spots, of white; scapulars and wing-coverts, plain olive-brown; chin and throat, dull white; breast and sides, olivaceous buff, without a shade of slate-grey; vent and under tail-coverts, dusky brown, slightly barred and spotted with dull white. Although at least three examples of *Crex Baillonii* have been obtained in Cornwall, the above is the first recorded instance of the capture of *Crex pusilla* in that county.—JOHN GATCOMBE (Stonehouse, Devon).

[In Mr. Rodd's 'List of Cornish Birds,' 2nd ed., 1869, it is stated that Mr. Drew, naturalist, late of Plymouth, had a specimen of the Little Crake, which he said he had received from that neighbourhood. His surmise that the species would turn up some day in Cornwall has now been verified.—ED.]

FORMER NESTING OF THE KITE IN LONDON.—It has been stated that Kites used formerly to breed in London. In the Report of the Select Committee of the House of Commons on Wild Birds Protection will be found this statement by one of the witnesses examined (Appendix, p. 169):—"I have seen in old London newspapers references to taking Kites' nests in Hyde Park, and it used to breed in the clumps of trees at Gray's Inn, and other places in London, between one and two centuries ago." I shall be much obliged to any correspondent who will enable me to verify this statement by referring me to any published accounts on this subject.—J. E. HARTING.

WOOD PIGEONS NESTING NEAR A HOUSE.—I do not think the nesting of the Wood Pigeon, *Columba palumbus*, near a house is an uncommon occurrence. During the few years of my residence near Pershore, in Worcestershire, a pair of these birds nested every season in a deodar, within ten yards of my front door, the branches of which were touched by every carriage that came to the door. On one occasion the nest was not more than seven feet from the ground, and I used to go nearly every morning and pull down the branch to see how the young birds were getting on.—WILLIAM H. HEATON (Meadow Croft, Reigate).

AUTUMN AND WINTER MIGRANTS.—From observations which I have made in this district during the past winter I can fully confirm Mr. Cordeaux's remarks (p. 102), as to the scarcity, if not total absence, of the Common Snipe and Jack Snipe. In fact, the disorder among our autumn

migrants seems to have been general. I have not seen or heard of a single Woodcock. Fieldfares and Redwings arrived here in countless numbers about the fourth week in October, and after staying a few weeks they disappeared, nor have I seen—with the exception of a flock of Redwings which appeared on the 26th December—a single example of either species since. There has been scarcely any migratory movement among our partial migrants, yet it is certain we received a large immigration of Rooks up to the end of autumn. Hen Chaffinches, as usual, migrated, returning, however, about the end of February. Starlings have been more or less in flocks all the winter. When collecting cocoons of *Saturnia Carpini* on the moors, I was surprised at the number of Wrens I met with till the end of December. They must have found a scanty subsistence; I had a chase after one of them, and I would strongly recommend it to those whose habits of life are of a sedentary character, as I can testify to its beneficial effects in calling the dormant muscles into action. Vast flocks of Mealy Redpolls have visited our birch copses this winter. I saw them many times in December, but took them to be Lesser Redpolls. On the 4th February I saw two which had been shot out of the flock, and identified them as Mealy Redpolls. Their superior size, the comparatively light-coloured rump, and the relative length of the fourth primary, are features which sufficiently differentiate them from the commoner species. I first saw the Pied Wagtail on the 24th February. A person brought me a Stonechat which had been shot on the 5th March. Probably this was not a migrant. Wheatears were somewhat late in their arrival. This might have been owing to the cold weather which set in on the 21st March. They did not arrive here until the 6th April.—E. P. P. BUTTERFIELD (Wilsden).

SPRING MIGRATION OF BIRDS.—I expressed my conviction (p. 30) that Mr. Cordeaux was wrong in stating that the song of the Willow Wrens was dependent upon, and consequently not heard until, the arrival of the females, which succeed the males, Mr. Cordeaux thinks, a few days. I believe, providing the weather is warm and their insect-food abundant, we hear their song immediately after their arrival. This has been undoubtedly the case this year. It seems to be less capricious in its time of arrival, and not so susceptible to atmospheric influences, as most of our summer migrants. The date on which it made its appearance in 1876 was the 14th April, although a bitterly north-east wind prevailed. In 1877, on the 12th, which was also a most cold and backward spring. During the present year the wind was west, temperature warm. I heard a Ring Ouzel on the 14th April; and an ornithological friend told me he had both seen and heard it on this date. Probably it had been absent for a few days, as a gamekeeper told me that he and a friend had seen one on the 6th. On the evening of the 17th April I saw a flock of Fieldfares—for the first time since their

arrival in November—flying in a northerly direction, and evidently migrating. This total absence of the Fieldfare here during the winter is quite exceptional, if not unique, in my ornithological experience. I saw a Redstart on April 17th, and about a dozen Sand Martins on the 18th; and my brother saw a Swallow on the last-mentioned date. Two male Tree Pipits were observed, both singing, on the 19th April, and a Yellow Wagtail on the 21st. All the above-mentioned migrants, excepting the Swallow, are now (April 21st) generally distributed in suitable localities. The wind has veered into the east, and we are beginning to experience the truth of the old proverb, “One Swallow doth not make a summer.”—E. P. P. BUTTERFIELD (Wilsden).

SUMMER MIGRANTS NEAR DUBLIN.—I forward to you the following list of summer migrants, with dates of arrival, as observed by members of our Field Club:—Wheatear, March 24th; Swallow, April 8th; Chiffchaff, 9th; Willow Warbler, 11th; Cuckoo, 16th; Swift and Corn Crake, 17th; White-throat, 18th; Sand Martin, 22nd; Flycatcher, May 12th.—C. W. HENSON (Rathmines School, Dublin).

ORNITHOLOGICAL NOTES FROM THE SEA OF MARMORA.—In a letter from my brother, Lieut. Gervase Mathew, R.N., dated on board H.M.S. ‘Cygnet,’ off Bulair Lines in the Sea of Marmora, on the 14th May last, are several ornithological notes which I think will be interesting to readers of ‘The Zoologist,’ and I accordingly forward them for publication. He says:—“During our passage from Malta to Besika Bay a number of birds, migrants, flew on board the ship—Swallows, Turtle Doves, Grey-headed Wagtails, &c. One of the first birds I noticed was a Little Bittern; it flew on board and settled in one of the big boats we were bringing out. I crept up alongside the boat, then suddenly jumped up and caught the bird as it flew up. It was a beautiful creature; I skinned it, and it proved to be a female. One day a violent thunder-storm broke over us and the rain came down very heavily and lasted for several hours. In about half an hour from the time it commenced the ship was crowded with birds, the greater number being Grey-headed Wagtails (of which there must have been several hundreds), Turtle Doves, Swallows, Whinchats, Titlarks, Cuckoo (one), Short-toed Lark (one), Striated Bunting, &c. In Besika Bay and up the Dardenelles there were many hundreds of Shearwaters; they are continually on the move, flying backwards and forwards, and the Turks say they are the spirits of the departed. They seem to be darker birds than our English Shearwater. The commonest gull about Gallipoli is the little black-headed Adriatic Gull, a very pretty bird with intense black head and bright coral red legs and beak. Its note is very different from that of *Larus ridibundus*, and it is, I fancy, a trifle larger. Herring, Lesser Black-backed

and Common Gulls are plentiful. The Herring Gull has bright *yellow* legs: this, as far as I can remember, is different from our bird. The Lesser Black-backed Gull also seems different. There are no Rooks in these parts, but their place seems taken by Storks, who are very tame, and may be seen following the plough and walking sedately about the fields and gardens looking for food: the females are now sitting on their huge nests placed on top of a chimney, the domes of the mosques, or any convenient corner on a roof. On the 7th I went across to a place called Tcherdak, on the Asiatic side, opposite Gallipoli, to try for Quail. We got six brace and a half, and some Calandra Larks, which are fine big fellows and very good in a pie. There were numbers of Bee-eaters flying about, and their brilliant plumage looked beautiful in the bright sun. They hawk about for flies something like Swallows, and keep up a monotonous croaking the whole time. I must have Bree's 'Birds of Europe' sent out to me, for I feel the want of this work. There are several birds about here I cannot make out. One of the prettiest is a Bunting with black head, yellow throat, breast and belly, and reddish back. I remember the figure very well, but forget the name of the bird. I have skinned one specimen. The female is not nearly so brightly coloured. Calandra, Crested and Short-toed Larks are common, as is one very pretty Wheatear (not *Saxicola ænanthe*) and several Warblers, Buntings, Pipits, &c., whose species I am not certain of. Little Kestrels are very common and tame, breeding among old tumble-down houses in the village of Bulair; as also are two kinds of Shrike I am not certain of, Buzzards, Hen Harriers, Magpies, Crows, Ravens and Royston Crows feeding on carrion; on the beach Little Ringed Plovers, Common Sandpipers and Little Terns (the former and latter evidently breeding); in a marsh, Black Terns (breeding), Snipe, &c., and at the report of my gun two black and white Geese rose from the rushes. They were rather fat; their wings seemed to be black and most of their bodies white, and I fancy their heads black. I cannot make them out. Near this marsh I came upon a lot of Pratincoles hawking about for flies, and was much interested in watching them. They were ridiculously tame and pitched within twenty yards of me, and when flying often came within a few feet. On the ground they do not move much, but on the wing they are very graceful, flying and twisting about in an elegant manner after flies. I shot three of them, but was sorry to do so, they were such pretty innocent-looking creatures. The base of each mandible is *bright vermilion*; I do not remember this in any plate, so perhaps it may fade after death. Unfortunately my shot was too large, and I only managed to make one decent skin. The bird's crop was full of small beetles, mostly Brachelytra. Tell me, when next you write, where to look for their nests, for I fancy they may breed here. This is not much of a place for butterflies; there is hardly a tree in the country—all grass and a few stunted bushes. The

only species not British I have taken are *Anthocharis belemia* and *Syrichthus lavertera*. Larvæ of *P. cratægi*, *B. neustria*, *D. cæruleocephala*, *E. lanestris*, and an unknown 'egger,' are very numerous, and I daresay a few 'blues' and grass-feeding *Satyridae* will turn up later on. The weather here is very unsettled; one day it is bright and hot, with scarcely any wind, and the thermometer up to 70°, and the next day it is cloudy, cold, and blowing, with thermometer down to 55°. I have written to my agents to send me out a breech-loading walking-stick gun, with dust-shot and cartridges, as I should like to skin a few of these small birds while they are in their summer plumage; but this is a tiny den of a place; it is most difficult to do anything, or to stow away things."—MURRAY A. MATHEW (The Vicarage, Bishop's Lydeard, near Taunton).

AN OLD LIST OF LINCOLNSHIRE BIRDS.—When amusing myself not long since in the British Museum Reading Room, I took down from one of the shelves a volume entitled '*Notitiæ Ludæ*; or, Notices of Louth.' It was published anonymously in 1834, and I have no idea who was the author. At page 283 is a list of the birds of the district, prefaced by this remark:—"I observe no other order than that by which I became acquainted with them. Game and such birds as are common I omit; nor is it pretended that I have become acquainted with all the birds which may be seen in the neighbourhood." Amongst the species named are the following:—Long-legged Plover, Crane, Soland Goose, Hoopoe (rare), Egret, Avoset, Gaubet [*quære* Gambet, *i. e.* Redshank], Dotterel (plentiful), Spoonbill, Black Wren [*quære* Black Tern], Shrimp-catcher or Shoveller, Poppinjay [?], Stork (three times in ten years), Ospray, Ptarmigan [! ?], Sarcelle (rare) [!]. This book having been privately printed is probably not well known to ornithologists, and for this reason, no doubt, escaped the notice of my friend the author of '*The Birds of the Humber District*.' It is to be regretted that the writer "omitted such birds as are common," for it is always interesting to compare the former zoological aspect of a district with its present fauna; and birds that may have been common enough in the neighbourhood of Louth forty-four years ago may be rare, or even unknown there at the present time. With regard to some of the names above given one can only speculate as to the species intended. For example, it is by no means clear what birds are referred to under the names "Poppinjay," "Ptarmigan," and "Sarcelle." The "Poppinjay," I believe, is generally identified with a Parrot of some kind, and in Heraldry is always so represented; but the author of '*Notitiæ Ludæ*' may have bestowed this name on the Jay, possibly under the impression that the name Jay is an abbreviation. Were I not writing these lines away from home and all my books and papers, I might be able to refer to a memorandum of having somewhere read a description or allusion to the Poppinjay which pointed to its identity with

the Green Woodpecker. Possibly this may be the bird referred to in the list in question. As the author expressly states that he omits "such birds as are common," it is doubtful whether he would intend to include the Jay. With regard to the "Ptarmigan," there must be some mistake, for it is impossible to suppose that this rock-loving species, this bird of the mist and mountain, was ever met with in haunts so uncongenial to its habits as the flats and fens of Lincolnshire. The word "Sarcelle," as every naturalist knows, is the French name for our familiar little Teal; and yet if this be the bird referred to by the writer of '*Notitia Ludæ*,' it is strange that he should have called it "rare" in Lincolnshire, where, at the date at which he wrote, it must have been one of the commonest of all waterfowl, being annually taken in decoys by hundreds, not to say thousands. Should the author be still living, and read these lines, he would confer a favour by affording some explanation.—J. E. HARTING.

MANX SHEARWATER IN OXFORDSHIRE AND NORTHAMPTONSHIRE.—I recorded, at p. 135, the fact of some Manx Shearwaters having been captured alive in Oxfordshire. I am now able to add two more to the list. Mr. H. Norris, of Swalecliffe Park, near Banbury, writes me:—"As to the Manx Shearwater in my possession, I beg to say it was caught by some workmen returning home one evening in September, 1877, by the brook-side at Framington, near here. I sent it to Spicer at Leamington to be stuffed, and he informed me that it was an adult bird. I tried for two days, with fish and raw meat, to keep it alive, but it would eat nothing. I then turned it into the garden, hoping it might, like the Plovers, take to worms and slugs. There is a finer specimen than mine at a tenant's house near Chacombe, in Northamptonshire, which was caught near there."—C. MATTHEW PRIOR (Bedford).

THE BLACKCAP IN SCOTLAND IN WINTER.—At a recent meeting of the Natural History Society of Glasgow, the Secretary read the following note on the occurrence of the Blackcap Warbler, *Sylvia atricapilla*, in Scotland during winter, by Mr. Robert Gray, F.R.S.E., hon. member:—"In 1862, Mr. Osborne recorded, in the 'Proceedings of the Royal Physical Society of Edinburgh,' that he had shot two specimens of this warbler in Caithness in the month of October. The announcement gave rise at the time to an expression of considerable doubt on the part of one of the London critics, who indeed did not hesitate to say that Mr. Osborne had made a mistake. Not long afterwards, however, other specimens having been met with even later in the season and in the same county, his suspicions were allayed by the production of the birds themselves, and the fact was thereafter made known, through one of the London magazines, that Blackcap Warblers could not only survive the rigours of our Scottish climate in Caithness, but that they could keep themselves in good condition by feeding entirely upon

fruits. Since Mr. Osborne's observations were published I have taken every favourable opportunity of watching the habits of what may now with propriety be called our fruit-eating warblers (for there are others besides the Blackcap), and I find that towards the close of autumn as insects become scarce, or perhaps indeed through preference, those birds betake themselves to the glens and gullies, where they greedily devour quantities of the berries of the mountain ash and other fruits. Later in the season the birds come nearer towns and villages, and are then seen frequenting gardens and orchards, picking up what they can find. The specimen which I now exhibit was observed by one of the boys at Merchiston School, near Edinburgh, on the 5th January, and brought down by a stone from a catapult, in the use of which these boys are certainly proficient, however much they may be behind in other attainments." Mr. Gray has presented the specimen to the Hunterian Museum.

FOOD OF THE LONG-TAILED DUCK.—At a recent meeting of the Natural History Society of Glasgow, Mr. David Robertson, jun., read some notes on the food of the Long-tailed Duck (*Harelda glacialis*, Linn.). After some general remarks he stated that the Long-tailed Duck was purely a sea-bird, never being seen on land except during the breeding season. It feeds exclusively on shells, which it obtains beyond tide-mark, diving to the depth of twenty to eighty feet, and remaining under water for a considerable time picking up the small shell-fish attached to the sea-weeds and stones at the bottom. In the crop of one shot in Skye he had found a large number of shells, two of which he was unacquainted with, and having sent these to Dr. Gwyn Jeffreys for examination he had identified them as *Cyclope neritea*, a Mediterranean species not known to Britain. One of the specimens was a young one, but Dr. Gwyn Jeffreys was able to determine that they were both of one species, although hitherto they had been considered as distinct. This bird must have picked up these shells either in the Mediterranean, where, however, it is seldom seen, and flown direct to Skye, and there been immediately shot, or what is more likely, as the shells had not undergone any trituration in the gizzard, it had found them near the spot where it was killed. *Harelda glacialis* will thus have the credit of first bringing to light the fact of *Cyclope neritea* being entitled to a place in the British fauna.

THE CAPERCAILLIE IN SCOTLAND.—At a meeting of the Natural History Society of Glasgow, held on the 30th April last, a paper was read entitled "A Chapter in the History of the Capercaillie in Scotland, being Preliminary Notes on Damage done to Pine Forests," by Mr. John A. Harvie Brown. The writer treated the subject at considerable length as regards the Capercaillie, and also referred to the damage done to pines from the ravages of a beetle, of a nature to create quite a sensation in the Crieff district. He

showed specimens of the beetle in a living state, and also of the fir shoots and bark, which gave decided evidence of their destructive habits. Mr. Peter Cameron made some remarks on the specimens.

PROVINCIAL NAMES OF BRITISH BIRDS, &c.—The western nomenclature is peculiarly characteristic. All the names in the following list are in common, I might say exclusive, use in the south-eastern part of Cornwall, which is the district I am best acquainted with, and many, if not all, are general in all the country lying west of the Vale of the Exe. The spelling is of course my own, but I think it may be taken to represent the sound pretty correctly. By the way, has it struck any philologist that names of animals, particularly of birds, whose names are under the protection of the rising and birdnesting generation, are more likely to be handed down correctly than perhaps any other words. Is not this worth the attention of the Anthropological Society? In giving the common English name in the following list I have, as to birds, followed Yarrell:—

Mistle Thrush	Holm-screech
Blue Titmouse	Hackey-mawl
Yellowhammer	Gladdie
Chaffinch	Copperfinch
Greenfinch	Green Linnet
Bullfinch	Hoop
Wren	Ranney
Water Rail	Gutter-cock
Wagtail	Dish-washer
Nightjar	Night Crow
Heron	Hern
Woodpecker	Hood-awl
Peewit	Horney-wink
Common Snake	Long-cripple
Mole	Want
Worm	Angletwitch
Hedgehog	Hadgey-boar
Bat	Airey-mouse
Wasp	Apple-drane
Humble-bee	Drumble-drane
Shrew Mouse	Screw
Weasel	Cane

The name for the Peewit is more local than perhaps any of the others. I do not recollect having heard it out of Cornwall. In that for the Woodpecker "Hood" is the western pronunciation of "Wood"; as, for example,

“Hoodcock” for Woodcock, “Hood Dove” for Wood Dove, &c.—G. G. LITTLE.

[We shall be very glad to receive other provincial lists from any correspondents who may be disposed to forward them.—ED.]

DESTRUCTION OF SHELL-FISH BY SEA-BIRDS.—At an inquiry held recently by Messrs. Buckland and Walpole into the condition of the sea-fisheries of Morecambe Bay and the estuary of the Duddon, a good deal of attention was directed to the alleged diminution in the supply of shell-fish, especially cockles, in the locality. At the Furness Abbey inquiry the importance of this branch of the subject was set forth at the outset of the proceedings by Sir James Ramsden, Managing Director of the Furness Railway, whose evidence showed that, exclusive of local consumption, no less than 2254 tons of cockles, valued at £11,270, were carried over a portion of the line during 1877. A letter was also read which stated on good authority that more than £10,000 worth of cockles had been gathered in a year on Kent's Bank alone. The bulk of the evidence tended to prove that, in the same way as is the case with the flat-fish, cockles and mussels are annually decreasing in numbers, and the seafaring witnesses seemed unanimous in attributing this decrease, amongst other causes, to the depredations of sea-birds, which are said to have multiplied exceedingly since the passing of the Act for their protection in 1869. As this charge is a very serious one, as far as the birds are concerned, and may possibly lead to some alterations in the laws for their protection, perhaps I may be excused from offering a few remarks with a view to inducing others to state their views on the subject. That sea-birds do eat cockles (to which, as being the most valuable of the different varieties of shell-fish alluded to in the inquiry, I shall confine my remarks) is proved beyond shadow of doubt, and we can readily believe that their consumption is very great. According to the reports in the local papers, gulls alone were referred to as the offenders, Herring Gulls and Black-backs being specially alluded to. The Black-headed Gull, which breeds in countless thousands at various spots in the neighbourhood of Morecambe Bay, was not, as a rule, included amongst the accused, though one witness asserted that this species is in the habit of carrying the cockles into the air, and dropping them on a stone, in order to get at their contents (the larger species are said to swallow them whole). But it must be evident to anyone who has taken an interest in the subject, that the gulls are by no means the worst offenders. Oystercatchers, enormous flocks of which frequent the sands throughout the year and breed in large numbers on the coast, live entirely on shell-fish, and it is quite possible that cockles, at any rate when they are only as large as small peas, form a large proportion of the food of the numerous waders, from the

Curlew down to the Dunlin,* which abound in this locality. Next to man, however, I am inclined to think that the Scoter, or Black Duck, is the worst enemy with which the cockle has to contend. A short time ago two of these birds were sent to me which had been shot in the neighbourhood of Grange, at the head of Morecambe Bay. I had the curiosity to examine the contents of their gizzards, and was surprised to find that they were both crammed with the shells of cockles, to the exclusion, apparently, of any other kind of food. Several of the shells were still entire, and measured half an inch in diameter. The rest, some of which had evidently been of much larger dimensions, had been broken up by the grinding process they had undergone. There could not have been less than the remains of a dozen cockles in each of the specimens I examined, and, supposing that a Scoter would eat from twenty to thirty in a day, a flock containing a thousand of these birds would devour in the course of a season (allowing due time for their absence at their breeding stations) not less than seven million cockles, amounting in weight to at least sixty tons. And yet a flock of a thousand Scoters does not represent a tithe of what may be seen in the bay at any time during the winter months. The mode in which these ducks procure their food is peculiar, and until I found it out I was at a loss to understand why they might so frequently be seen swimming in the shallow water at a distance of from fifty to a few hundred yards from the water's edge. As the rising tide covers the banks, the sand, for the depth of an inch or two, is gradually stirred up until it becomes a semi-liquid mass. The cockles, which, unlike mussels, are not attached to any foreign substance, lie at about this depth below the surface, and the ducks, swimming up on the advancing flood find no difficulty in diving or reaching down and extracting them from their sandy bed. The same tidal action tends, doubtless, to disperse the spat given off by the parent cockle during the breeding season, and explains how they are able to move (whether of their own free will or not I am unable to say) from place to place. No doubt, too, it is in this way that the shell-fish which live beneath the sand obtain their food—a fact which finds support in the evidence of one of the witnesses, who alluded to the mortality produced among the cockles by severe frosts. Thus far the case against the birds appears as black as possible; but, on the other hand, we are met by the unanswerable argument that thirty years ago the birds were ten times as numerous as they are at present; and yet, according to the evidence of the opponents of sea-birds, the shell-fish were also far more plentiful than is now the case. These are facts which it is hard to reconcile, and we must be content to suppose that in those days there was room enough for the birds, the cockles, and their human enemies to live without the weaker species being

* We have often found cockles, sometimes of large size, in the stomach of the Curlew, but never in that of the Dunlin.—ED.

in danger of extermination, and the balance of nature was evenly kept up. As soon, however, as—owing to the opening of the iron mines, the extension of the railway system, and the rising up of large towns, such as Barrow, in the neighbourhood—the population began to grow abnormally, and, at the same time, the demand for every sort of food in the manufacturing districts to increase enormously, the balance was upset, and the day, though still distant, can be seen approaching, when the humble cockle will be as rare as the oyster, and, if preserved at all, will have to be cultivated in the same way as that animal is at present. Whatever may be said of the sea-birds, I believe it is simply the old story of the demand exceeding the supply which must account for the diminution in the number of British shell-fish.—W. ARTHUR DURNFORD (Barrow-in-Furness).

EXUVIATION OF LOBSTERS.—In 'The Field' of May 25th, Mr. W. A. Lloyd, of the Crystal Palace Aquarium, has an interesting article with this heading, in which he points out that the notion which prevailed formerly (that is before the establishment of public Aquaria afforded such facilities for the study of *Crustacea*) as to the mode in which lobsters annually cast their shells, is erroneous, and he very clearly describes the curious process from his own observation. The article, which occupies two columns in 'The Field,' is too long to be quoted *in extenso*, but we feel sure that the following extract, which contains the pith of Mr. Lloyd's remarks, will be read with interest by all who have not already perused it in the columns of our contemporary:—"What takes place," says Mr. Lloyd; "is this: the lobster, feeling the time of exuviation approach—which in aquaria may be any time of the year—seeks a retreat where it may be safe during the period of soft helplessness, which lasts for three or four days after exuviation; usually selects it below some overhanging rock, and if there is protection on each side so much the better. If there is a good deep bed of sand and shingle, as there should be, six or eight inches thick, the lobster proceeds to excavate this away behind, and with its anterior limbs pushes it up in front, and makes a kind of defensive earthwork. In this it is aided by an occasional fanning motion of its false feet in driving away a current of sand outwards, below its tail, the head being then turned inwards, towards the hinder part of the snug little cave thus formed, into which the lobster never allows any other creature to enter, not even a gentle little shade-loving fish, like *Motella*. When the moment arrives for casting the shell, the lobster falls over on its side, a rupture is made in the membrane uniting the posterior of the cephalo-thorax with the anterior ring of the abdomen, and presently a part of the lobster's new coat may be seen between these two. The rent is made by the lobster suddenly and

strongly bending its tail inwardly towards its head. In a few minutes the whole of the tail or abdomen is outside of the old shell, and the two may be seen side by side. Then the exuviation of the front half of the lobster goes on, all at once, legs and head-appendages and body together, and the last portions but one seen of the creature in its fresh covering are the tips of the large anterior limbs, which, as I have said before, are for a few minutes a little misshapen. Last of all appear the longer tentacles. During this process, which from first to last takes up about a quarter of an hour, the lower edges of the cephalo-thorax become a little separated from each other, laterally, to the extent of about one inch in a large specimen, and this appears to be for the purpose of allowing more room below than would otherwise be possible for the extrication of the limbs. To this end, therefore, and in my opinion for no other, does the straight longitudinal furrow, and its membrane below, constitute a kind of hinge or joint. As soon as the old shell is quite detached, and the animal is in its normal position, and has rested for a few minutes, it pushes the cast shell over the edge of the earthwork of sand and shingle, outside the den. Sometimes the lobster buries its old coat; but in any case this rough usage of it has a tendency to break the very tender membrane at the hinge, and usually it is found torn, and the cephalo-thorax in two. But when an observer, quickly after exuviation, very carefully removes it out of the water, it will be found quite whole, and if the shell be immediately set-up on a board it *may* dry without separation; but usually even then it begins to split, unless such splitting be arrested by gumming narrow strips of thin paper outside, across the joint, at intervals. However, I think I have said enough to show that no part whatever of the lobster is necessarily ruptured, save the membrane transversely where the cephalo-thorax and abdomen join, and that absolutely *the whole* of the interior animal comes out through the orifice thus formed; also that no breakage or splitting of the shell occurs anywhere else, the longitudinal split of the upper fore-part of the shell being merely an after-accident. After solidification, in three or four days, or within one week, the shell or animal never increases till the next exuviation."

TRUFFLES.—Most people are familiar with the appearance and taste of truffles, but few probably know anything about their organisation and reproduction. The subject is a very curious one; and although more suited perhaps to a botanical journal, it may be discussed not inappropriately in a magazine of Natural History. A French writer says ('Revue Encycl.' xxxv. 794):—"The truffle, *Tuber cibarium*, is a vegetable entirely destitute of leafy appendages and of roots; it is nothing more than a rounded subterraneous mass, absorbing nourishment upon every point of its surface,

the reproduction of which is dependent upon bodies generated within its substance. The truffle is composed of globular vesicles, destined for the reproduction of the vegetable, and short and barren filaments, called by the French botanist, M. Turpin, *tigellules*. The whole forms a substance at first white, but which becomes brown by age, with the exception of particular white veins. This change of colour is dependent upon the presence of the reproductive bodies, or *trufinelles*. Each globular vesicle is fitted to give birth, in its internal surface, to a multitude of these reproductive bodies; but there are only a few of them which perfect the young vegetable. These dilate considerably, and produce internally other smaller vesicles, of which two, three, or four increase in size, become brown, are beset with small points on their exterior surface, and fill the interior of the larger vesicles. The small masses thus formed are the *trufinelles*, and become truffles after the death of their parent. Thus the brown parts of the truffle are those which contain the *trufinelles*; and the interposed white veins are the parts which are destitute of *trufinelles*. The parent truffle, having accomplished its growth and the formation of the reproductive bodies within, gradually dissolves, and supplies that aliment to the young vegetable which is proper for them. The cavity originally occupied by it in the earth is then left occupied by a multitude of young truffles, of which the stronger starve or destroy the others; whilst they frequently adhere together, and, enlarging in size, reproduce the phenomena already described. One circumstance in the natural history of the truffle is still unexplained. If the method described be the only mode in which the truffle is reproduced, then it is difficult to comprehend the enormous multiplication of that vegetable in certain parts of France, where immense quantities are annually collected, without exhausting, or even diminishing, the race. If this fungus has no means of progression, how can the young truffles leave the place of their birth, and become disseminated over the soil?"

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 18, 1878.—Dr. J. GWYN JEFFREYS, F.R.S., Vice-President, in the chair.

The following gentlemen were balloted for, and elected Fellows of the Society:—The Rev. A. A. Harland, M.A., Harefield Vicarage, Uxbridge; the Rev. J. J. Muir, M.A., Waterloo, near Liverpool; W. G. Piper, Esq., Cambridge Road, Anerley; and Frederick Townsend, Esq., M.A., Hornington Hall, Shipton-on-Stour.

The Rev. H. H. Higgins exhibited photographs of a large beetle, the *Dynastes neptunus* of Schönherr, and of an undetermined species of locust from Borneo. The latter has resemblances to the genus *Pseudophyllus*, but measures nine inches and a half in the expanse of its wings.

A paper, "On the Geographical Distribution of the Gulls and Terns (*Laridæ*)," was read by Mr. Howard Saunders. This group, comprising four subfamilies,—*Sterninæ* (Terns), *Rhynchopsinæ* (Skimmers), *Larinæ* (Gulls), and *Stercorarinæ* (Skuas),—notwithstanding wide marine dispersion, possesses several remarkable isolated forms. In numbers there are about fifty-three species of Terns and Skimmers, fifty Gulls, and six Skua Gulls. After entering into detail as regards various forms, their peculiarities of habit, and distribution, the author pointed out that the majority of the typical *Larinæ* are found in the North Pacific, where alone the arctic and white primaried forms are connected, through *Larus glaucescens*, with the group which have distinctly barred primaries. In the same area, also, is it shown where the three-toed *Rissa* begins to deviate from the typical four-toed gulls, and the line of connection traced between the only two species with forked tails, *Xema*. Here, also, can be traced the typical Hooded Gulls, of which *L. ridibundus* is the Palæarctic representative, and which in *L. glaucoides* extends to the Magellan Straits, while in the eastern hemisphere it is not found beyond 10° N. lat. Moreover, in the North Pacific there obtains the peculiarly coloured Tern, *Sterna aleutica*, which connects the typical *Sternæ* with the intertropical Sooty Terns, *S. lunata*, *S. anæsthesia*, and *S. fuliginosa*. Of isolated groups, which have no apparent connection with the Pacific, may be mentioned the New Zealand *Larus Bulleri* and *L. scopulinus*, the Australian *L. Nova-hollandia*, and the South African *L. Hartlaubi*. In the Arctic region there are the two isolated specialized genera of Gulls, *Pagophila* and *Rhodostethia* (the Ivory Gull and Ross's Gull), which are not known on the Pacific side; whilst amongst the Terns the intertropical genera, *Nania*, *Anous*, and *Gygis*, although somewhat related among themselves, offer no particular points of union with the typical *Sterninæ*. The bulk of the evidence collected by Mr. Saunders favours the idea that the North Pacific is probably the centre of dispersion of these chiefly oceanic or shore-frequenting birds.

Mr. J. Clarke Hawkshaw next read—"Notes on the action of Limpets (*Patella*) in sinking pits in, and abrading the surface of, the Chalk, at Dover." The author states the abrasions and finely-grooved hollows are made by the lingual teeth of the limpet when feeding on the fine coating of seaweed which covers the surface of the chalk between high and low water mark. He described the limpet's track as generally of a zigzag pattern, and exhibited specimens. These bare patches vary from eight to fourteen inches square, and about a line deep. There is, moreover, a

tendency to deepen, as the limpets apparently graze again over a grooved surface. The total amount of chalk thus annually denuded by all these creatures must be very considerable, though what is removed by an individual limpet appears insignificant. It was explained how mechanically, and not by any chemical agency, the limpets sink pits, which are often basin-shaped hollows, considerably below the level of the rim of the animal's shell.

May 2, 1878.—Dr. R. C. A. PRIOR, F.L.S., in the chair.

The following gentlemen were elected Fellows of the Society:—M. César Chambre, Broad Street, E.C.; and Thomas Comber, Esq., Redcliffe, Newton-le-Willows, Lancashire.

The Foreign Members elected by ballot to fill the vacancies of those deceased during last year were:—Teodoro Carnel, Professor of Botany and Director of the Botanic Garden, Pisa; Dr. Ernest Cosson, of Paris; Dr. George Engelman, of St. Louis, Missouri, U.S.; Dr. Edouard Fenzl, Professor of Botany at the University and Director of the Botanic Garden at Vienna; and Dr. Julius Sachs, Professor of Botany at the University and Director of the Botanic Garden, Würzburg—all highly distinguished for their original researches and published labours, chiefly on Physiological and Systematic Botany.

There were no zoological papers read at this meeting, but a memorandum in a letter from the Rev. H. H. Higgins, of Liverpool, was laid before the Society. In this he says:—"I enclose a rough drawing of what I take to be a Tubularian Hydroozoon allied to *Clava*. The drawing (exhibited) is of natural size. The specimen itself came into my hands in a curious way. Not long ago I saw, in a Berlin Catalogue, a work on New Zealand Zoophytes, which, with several other books, I ordered. The former turned out to be, not a printed volume, but a collection of dried specimens, one of which is the subject of the drawing. They were labelled, 'Northern Island, New Zealand, Andrew Sinclair, M.D.; from William Gourlie, Glasgow.' Besides the object in question, among the specimens are a few fine things, one of which is an arborescent *Hydractinia*, which Mr. Thomas Higgin, of Huyton, is describing. If the enclosed drawing of the Hydroozoon represents a *Clava*, it is of enormous size, though in its dry compressed state I cannot say much about it. The hydranth is club-shaped, the hydrocaulus about ten inches—in another specimen some sixteen inches—in length. The tentacles are squamiform, covering the hydranth. The sporosacs are absent, being, I suppose, deciduous. There was a Tubularian Hydroozoon, found by the 'Challenger,' about four feet in length, a short notice of which, if I remember aright, appeared in 'Nature.'"

Mr. J. C. Galton called attention to an object of about the size of a split hazel, obtained in a garden near Barking Priory, and which was

supposed to be a fossil tooth imbedded in surrounding matrix. Careful inspection, however, showed it to be one of the spined dermal plates of one of the Ray tribe of fishes, somewhat weather-worn and altered in appearance by burial.

On behalf of Mr. Thomas Higgin there was likewise shown a photograph of the natural size of *Chitina ericopsis*, and specimens of the same were exhibited under the microscope. Mr. H. J. Carter described the above as a new genus and species of the *Hydractiniidæ*, in the 'Annals and Magazine of Natural History,' 1873 (4th ser.), vol. xi., p. 13, but hitherto no figure has been given of structural or other peculiarities. Somewhat worn specimens in the British Museum Collection are labelled "Dr. Sinclair and Sir George Grey, New Zealand."—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

May 7, 1878.—F. D. GOODMAN, Esq., F.Z.S., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, 1878, and called special attention to a Squirrel from Ecuador (*Sciurus stramineus*), of a species new to the Society's collection, and to a male Beisa Antelope (*Oryx beisa*), presented by H.H. the Sultan of Zanzibar, and kindly brought home for the Society by Capt. Pasley of H.M.S. 'Simoom,' April 27th.

Mr. T. J. Parker read some notes on the stridulating organ of *Palinurus vulgaris* which had first been described by Dr. K. Möbius, but on whose observations Mr. Parker offered several criticisms.

A communication was read from Dr. F. Buchanan White, entitled "Contributions to a Knowledge of the Hemipterous Fauna of St. Helena, and Speculations on its Origin." In the first part of his paper the author, after briefly noticing what was known with regard to the fauna and flora of that remote and interesting oceanic island, and mentioning the various theories that had been brought forward to account for their origin, discussed the difficulties of the animals, and argued that they had evidently been derived at a remote period from the Palæarctic Region by way of Madeira, the Canaries, and the Cape de Verde Archipelago. In the second part of his communication, Dr. White described the *Hemiptera* collected in St. Helena by the late Mr. T. V. Wollaston, during the recent visit of that lamented naturalist to that island. The collection included thirty species, of which five were probably introduced; one appeared to be indigenous, but seemed identical with a European species, and the remaining twenty-four were regarded by the author as new and peculiar to the island. Seven new genera and one new subgenus were created for the reception of ten of the species, the rest, with one exception, being referred to European genera.

Specimens and drawings of details were exhibited in illustration of the paper.

Mr. P. L. Slater read some further remarks on *Fuligula Nationi*, a species of duck from Western Peru, of which he had lately received a nearly adult male from Prof. Nation, the discoverer of the species.

Mr. A. G. Butler read the descriptions of a small collection of *Lepidoptera* made at Kingston, Jamaica, by Mr. James J. Bowry.

Mr. Edgar A. Smith read a paper containing the description of three new land shells from Jamaica and Borneo.

A communication was read from Mr. D. G. Elliot, containing a memoir on the Fruit Pigeons of the genus *Ptilopus*. Mr. Elliot recognised seventy-one species of this genus.

May 21, 1878.—F. D. GODMAN, Esq., F.Z.S., in the chair.

A communication was read from Lieut.-Col. R. H. Beddome, containing the description of a new genus and species of Snakes, of the family of *Calamariidæ*, from Southern India, proposed to be called *Xylophis indicus*.

Mr. P. L. Slater read the tenth of a series of reports on the collection of birds made during the voyage of H.M.S. Challenger, containing an account of the birds of the Atlantic Islands and of Kerguelen's Land; and of the miscellaneous collections made by the Expedition.

Mr. J. Wood-Mason described several new or little known *Mantidæ* from India, Australia, and other localities.

Mr. H. W. Bates read a paper containing the description of new genera and species of geodephagous *Coleoptera* from Central America, belonging to the families *Cicindelidæ* and *Carabidæ*.

Mr. G. French Angas read the description of a new species of *Tudicula*, which he proposed to name *T. inermis*.

A communication was read from the Marquis of Tweeddale, being the ninth of his contributions to the Ornithology of the Philippines. The present paper gave an account of the collection made by Mr. A. H. Everett in the Island of Palawan, and contained the descriptions of nine new species, namely, *Tiga Everetti*, *Dicrurus palawanensis*, *Broderipus palawanensis*, *Trichostoma rufifrons*, *Drymocapthus cinereiceps*, *Brachypus cinereifrons*, *Criniger palawanensis*, *Cyrtostomus aurora*, and *Corvus pusillus*. The collection likewise contained three examples of the remarkable *Polyplectron emphanes*, of which the locality was previously unknown and specimens were excessively rare.

Prof. A. H. Garrod read a paper, in which he gave a description of the tracheæ of *Tantalus loculator* and of *Vanellus cayennensis*.

A second paper, by Professor Garrod, contained some notes on the anatomy of the Great-headed Maleo (*Megacephalon maleo*).—P. L. SLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

May 1, 1878.—H. W. BATES, Esq., F.L.S., F.Z.S., President, in the chair.

Mr. Henry John Elwes, F.L.S., F.Z.S., of Preston House, Cirencester, was elected an ordinary Member. Mr. Peter Cameron, of 31, Willow Bank Crescent, was elected a Subscriber.

Mr. Dunning drew attention to the fact that the present meeting marked the forty-fifth anniversary of the foundation of the Society.

Mr. W. L. Distant exhibited a specimen of the Hemipteron *Tetroda bilineata*, Walk., as a remarkable instance of immunity from the effects of damp, the same having been kept in a relaxing-pan for more than four months.

Mr. Distant also communicated a paper entitled "Notes on some Hemiptera-Homoptera, with Descriptions of new Species," in which he drew attention to the uncertainty of generic calculations as to geographical distribution; the *Homoptera* affording a good illustration in the family *Cercopida*, especially the genus *Cercopis*.

The President remarked that the old coleopterous genus *Buprestis* had, like *Cercopis*, at one time almost ceased to exist, through the generic subdivision it had undergone.

Part 1 of the 'Transactions' for 1878 was on the table.—W. L. DISTANT, Secretary.

WHITE WHALE AT THE WESTMINSTER AQUARIUM.—A specimen of the White Whale (*Beluga*), taken on the coast of Labrador, was safely housed in the large tank on the 29th May. The consignment originally consisted of four, two of which were intended for the Westminster Aquarium, but one of these died on the voyage; its death was the result of an accident, caused by a heavy roll of the 'Circassian,' in which steamer they were conveyed to Liverpool. Unlike the one received at Westminster last year, this specimen appears to be in good health and to have suffered little from its enforced confinement for five weeks in a large box, packed on a layer of sea-weed. In transit they are kept thoroughly moist—an indispensable condition of their existence—by the application of water every three or four minutes, both day and night. The specimen at the Aquarium is nearly full grown; its age is estimated at five years; length over all thirteen feet six inches. It has so far recovered from the effects of its long confinement as to remain some minutes at a time under water and to consume between fifteen and twenty pounds of live eels a day.

Fig. 1.

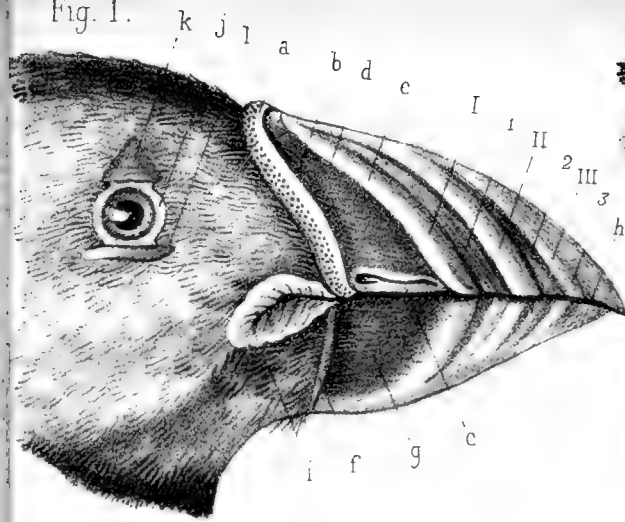


Fig. 2.

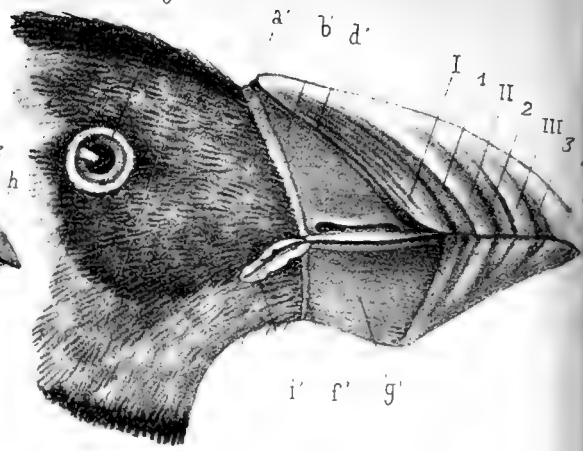
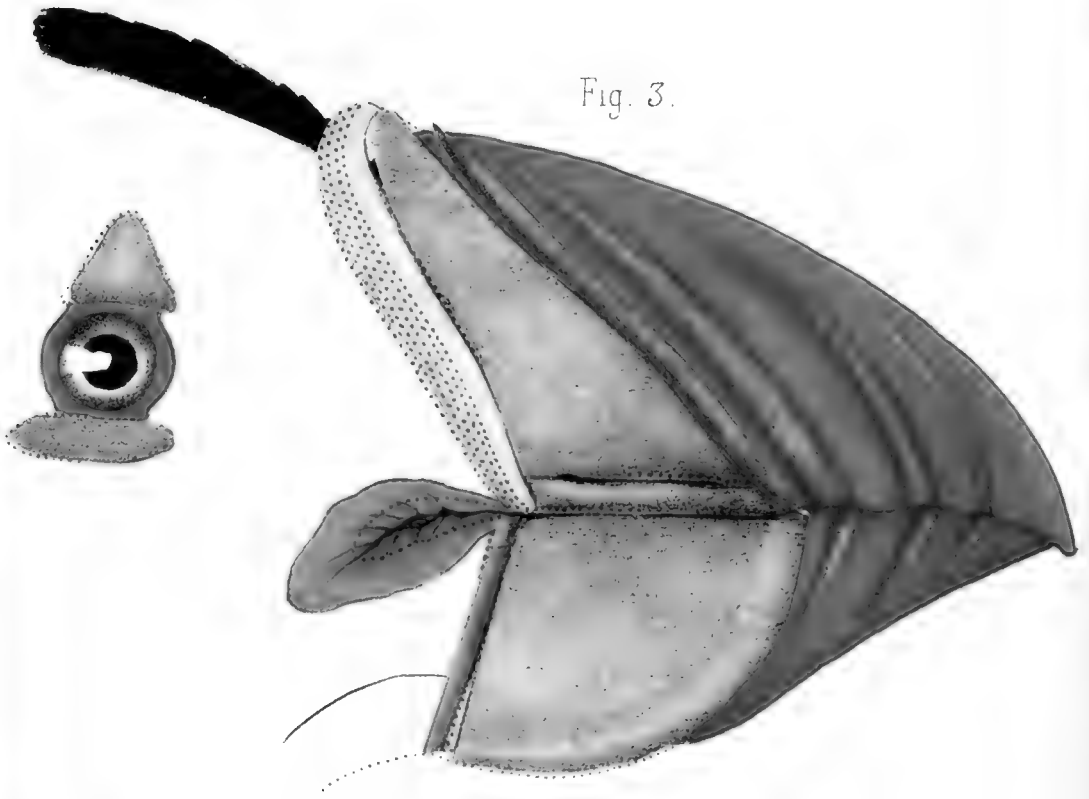


Fig. 3.



4.

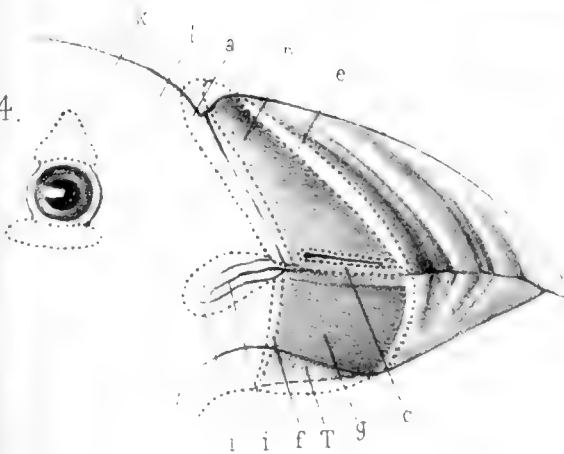
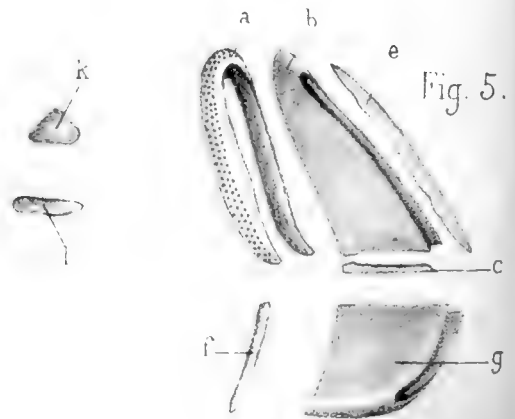


Fig. 5.



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[No. 19.]

ON THE MOULT OF BILL AND PALPEBRAL APPENDAGES IN THE COMMON PUFFIN.

DISCOVERED BY DR. BUREAU.

BY THE EDITOR.

SINGULAR as the above title may appear, it not only appropriately expresses the author's meaning, but is fully substantiated by the facts which he has detailed in a very interesting article recently published in the 'Bulletin de la Société Zoologique de France.'* His discovery is so remarkable, and, as far as I am aware, has been so little suspected by English ornithologists, that I believe it will be as agreeable to the readers of 'The Zoologist' as it is due to the author, to make it known as widely as possible, the more so as I have reason to think that the journal in which the article in question is published has not so extended a circulation amongst naturalists in this country as it deserves.

In the following pages, by Dr. Bureau's permission, I have attempted a translation of the more important portions of his paper, and he has most obligingly enabled me to reproduce the principal plate with which he has illustrated his subject. I trust he will accept this expression of my sincere thanks.

After referring to the published opinions of previous authors relative to the Puffin, and pointing out how little, comparatively,

*. "De la Mue du Bec et des Ornaments Palpébraux du Macareux Arctique, *Fratereula arctica* (Linn.), après la Saison des Amours." Par le Docteur Louis Bureau. Bull. Soc. Zool. de France, 1878.

is known concerning the natural history of this bird, Dr. Bureau proceeds as follows :—

“My ornithological excursions made me acquainted with two islands in Brittany, one the Ile de la Manche, and the other the Ile de l’Ocean, which are still privileged to give refuge during the nesting season to hundreds of Puffins.

“These two numerous colonies, the outposts of those which people the Northern Seas, furnished me with the materials for my study.

“In the spring the Puffins assemble on these islands to devote themselves to the task of reproduction; they are then all in the same plumage and wear the same adornments (*ornements*). The cheeks are of a greyish white; the beak elevated, and thick on a level with the nostrils; a pleat (*ourlet*) at the base of the upper mandible; the lower mandible curved regularly; the eyelids vermilion, adorned with two horny plates (*plaques*); a large rosette (*rosace*) of a bright yellow at the gape.

“By the middle of July the young are fledged, and towards the end of that month or the beginning of August the Puffins are out at sea. After that date not a single bird is to be seen on these rocks, which up to that time were so full of life.

“The rough weather sets in, the Puffins leave the shore and disperse over the sea, and then supervenes a blank in their history, which is only filled up by rare captures. But soon the winds of winter begin to blow with violence, and after some days of those fearful gales which every year visit our coasts, the waves bring ashore hundreds of dead or dying Puffins. The victims are chiefly young birds, but the adults share the same fate if the storm arises at moulting time, when the simultaneous shedding of the quill-feathers reduces the wings to mere stumps. Three times in the winter of 1873, after storms (January 24th, February 6th and March 4th), M. Marmottan, at Cape Ferret, Arcachon, came across thousands of Puffins, dead, and rolled in the sand by the waves.*

“The Puffins thus cast ashore on the French coast in winter are perfect skeletons, and clad in a plumage different to that worn by the individuals we get in the breeding season. In the orbital region, for instance, they have a spot more or less large, of a dusky

* The same observation has been made by Willughby, in his ‘Ornithology.’

brown; they have not the red eyelids, nor the horny plates above and below the eye, nor have they the puckered yellow skin at the base of the bill, and what is still more remarkable, the bill is differently formed; it is neither of the same size, shape, nor colour, and the pieces of which it is composed are not even the same. It is small, sliced off (*tronqué*) in front, especially at the lower mandible, wanting the pleat (*ourlet*) at the base, and flattened laterally on a level with the nostrils, where a solid horny skin of a bright lead-colour is replaced by a soft greyish membrane.

“Hitherto authors have considered the Puffins found in this state to be the young, of different ages, of *Mormon arctica*.^{*} This view was even generally adopted, when M. J. Vian, examining a large number of specimens procured in winter on the coasts of France, and recognizing amongst them both old and young, thought that they should be specifically separated from *Mormon arctica* under the name *Mormon grabæ*.[†]

“Neither of these views can be admitted. The first falls to the ground before the facts which I am about to detail; as to the second, in order to end all doubt, my friend M. Vian, admitting that, in view of my recent observations, *Mormon grabæ* has no longer any claim to specific distinction, has made a point of assisting me by obligingly placing at my disposal the specimens which served him as types. Dr. Marmottan, too, whose ornithological collection is rich in material for a study of the fauna of France, has entrusted me with his fine series of Puffins. A large number of specimens, from all quarters, have in fact been offered to me. I shall use them later, when, after another season’s observations on the coast of Brittany, I shall make known some other interesting points in the history of the Puffin. For the present I shall confine myself to a study of the metamorphoses to which the beak and the palpebral appendages of these birds are subject after the breeding season.

“It will perhaps be interesting to state here the different stages of enquiry through which I arrived at the discovery of the metamorphosis in question. I had for some years remarked that the beak of specimens killed on the French coast belonged to two very

^{*} See ‘The Zoologist’ for 1862, pp. 8003-4 and 1863, p. 8331.

[†] Bull. de la Soc. Zool. de France, 1876, p. 4. M. de Norguet (Bull. Scient. du Dep. du Nord, 1877, p. 39) sees in *Mormon grabæ* merely individual varieties of *Mormon arctica*.

characteristic types, one of which was met with in spring and the other in winter.

"The disappearance of the former type of Puffin just as the latter arrived, the presence in each of specimens evidently adult, the exact correspondence in size, speedily suggested that neither of the views above stated could be quite correct. The discovery of two large colonies of these birds on the coast of Brittany shortly strengthened my conclusion.

"I had, in a word, arrived at the conviction that the views in question were erroneous, without seeing my way to a satisfactory solution, when a careful examination of the beak, gape and palpebral appendages led me to suspect that these parts must be subject to a complete metamorphosis after the breeding season. The more I examined the pleat (*ourlet*), the rosette at the base of the bill, the horny plates to the eyelids, the more evident did the metamorphosis appear. But how did this phenomenon come about? Was it effected only when the birds had reached the high seas, or was it for me to witness it in the birds which were the last to quit their breeding places? Of this I remained ignorant until quite lately.

"In June, 1876, during a visit which I made with my brother to these colonies of Puffins, the examination of a large number of living birds strengthened my convictions, and I resolved to return shortly in time to witness the metamorphosis. My choice lay between the Ile de la Manche and the Ile de l'Océan, and although the former was frequented by a much larger colony, I selected the latter in the hope of obtaining on the same rock the young of the Roseate Tern (*Sterna Dougalli*).

"Although at that time I was occupied in Paris with my physiological studies, I started without hesitation on the 25th August, 1876, and on the 27th I crossed to the outskirts of the island, which rises above the sea in a majestic arch. But rough weather often prevails on this wild sea-board, abounding in shoals. The sea, running high with the tide and north-east wind, broke over the only accessible point, and it was therefore impossible to think of landing; besides it would have been labour lost, for the rock was deserted. In the hope of finding some loiterers I explored in vain the shores of the island; all, old and young, had already taken their departure, and the Roseate Terns were also gone. My journey therefore was fruitless: I had come a fortnight too late.

"In the month of July, 1877, returning from an ornithological trip to the South of Spain, I was not contemplating an excursion to our coasts, when an opportunity occurred of shooting some Puffins at a favourable period. On July 1st one was sent to me in process of metamorphosis. The time was well chosen, and I could not refrain from going to study on the spot this remarkable phenomenon. A compatriot whose name is well known to ornithologists, my excellent friend M. E. Bonjour, was very anxious to accompany me.

"On the 31st August we visited the Ile de la Manche. To our great disappointment the Puffins were already gone. About thirty only, very wary, kept to the edge of the island, and we could only secure a couple in partial change.

"Without losing time, we crossed to the Ile de l'Océan, round which we loitered for two days (5th and 6th August). The colony was certainly not what it had been during the breeding season, but the birds were still so numerous there that we had soon to cease shooting to avoid unnecessary slaughter.

"Almost all the specimens which fell to our guns were in full metamorphosis. The beak of these birds, which in the spring forms a horny sheath, solid and homogeneous, was then in process of scaling off in pieces like plates of armour; the fine rosette at the gape and the red eyelids were shrivelled and discoloured; the horny plates in the ophthalmic region had in certain specimens fallen off, and in others were coming off; the feet, of a bright vermilion in the breeding season, had become orange; in fine, in some specimens the moult had already commenced (except in the wings and tail), and the birds would soon have been in their winter plumage.

"In a word, the adult *Larventauscher** were, under our very eyes, changing to what some authors consider the young of *Mormon arctica* and others the adult of *Mormon grabæ*.

* Brehm, in his 'Handbuch,' calls the Puffin in one place *Larventauscher*, but elsewhere throughout he invariably spells it, like other authors, *Larventaucher* (without the s). If the former spelling be right, one must conclude that the moult of bill in the Puffin is a phenomenon of which the fishermen of the Baltic have long before me been aware. The *Larventauscher* is in fact *der vogel der seine Larve tauscht*, i. e., the bird which changes its mask. As to the other name, *Larventaucher*, it may signify strictly, *der Taucher mit einer Larve versehen*, i. e., the Diver with a mask—a name well suited to the bird; but every German reader will see that the composition is not very happy. It is not impossible, then, that the former is the

"It is now ten years since my friend M. Marmottan recollects having killed, in September, 1867, in the Baie de Somme, a Puffin, from the beak of which several pieces were becoming spontaneously detached.

"The best way of obtaining a comprehensive idea of the changes which the beak and the palpebral appendages of the Puffin undergo after the breeding season is undoubtedly to cast a glance at the movable pieces figured on the accompanying Plate; but the phenomenon is complex, and thoroughly to understand its different phases one must first comprehend the constitution of these parts in the adult in spring and in winter.

"The adult *Fratercula arctica* in spring has the beak elevated at the base, the lower mandible regularly curved from the base to the extremity. The beak is divided into two very distinct parts; one, the posterior, undergoes the phenomenon of moulting; the other, the anterior, remains unaffected:—

"1. The posterior portion is formed by the combination and suture of nine horny pieces, which disunite and fall apart after the breeding season. These are: on the upper mandible (fig. 1), the horny pleat (*l'ourlet corné*), *a*; the nasal covering (*la cuirasse nasale*), *b*; the two subnasal flakes (*lamelles*), *c*; and the two transparent flakes, *e*, which cover the posterior part of the first ridge (*bourrelet*). On the lower mandible, the two horny bands (*lisérés cornés*), *f*, and the chin-sheath (*cuirasse mentonnière*), *g*.

"2. The anterior, or persistent portion, presents three ridges and three furrows, which I may designate (going from base to point) as the 1st or great ridge (I.), the 2nd or middle ridge (II.), the third or little ridge (III.); the 1st or great furrow (1), the 2nd or middle furrow (2), and the 3rd or little furrow (3). Lastly, the beak is terminated by a smooth piece, forming a triangle with a curvilinear base, which I call the point of the beak (*h*). At the

true popular name. Ornithologists, not understanding the allusion to the change of mask, would see only in the final *Tauscher* the German name for "Diver," *der Taucher*, ill pronounced. But I will venture no further on the dangerous ground of etymology, which is not my province, and I hasten to conclude with this simple reflection, which I submit to German naturalists:—If the *Larventauscher*, *le Changeur de Masque*, is the true name of *Fratercula*, it is only right that it should be restored; if not, it may well be bestowed on it, for it is impossible to express more accurately in one word the remarkable physiological phenomenon which characterizes this bird.

gape, a thick skin, puckered and folded, forms a large rosette of an orange-yellow. The appendages of the eyelids consist of a wide, thick border of vermilion, and two horny flakes of iron-grey, one above triangular, the other beneath elongated (horizontally).

"Let us now see the aspect presented by the adult Puffin in winter, or after the breeding season.

"The beak is smaller, as if sliced off (*tronqué*) in front, and especially at the lower mandible, which then forms a broken line instead of a regular curve (fig. 2). The two very distinct parts which I have pointed out as existing in the adult in spring, may be here recognized, the one posterior, strangely modified by the fall of the nine horny pieces above-mentioned; the other anterior, which has remained unaffected.

"1. The posterior part has lost somewhat of its thickness and consistency; it is re-covered with a thick skin which presents, on the upper mandible (fig. 2), a membranous pleat (*a'*) and the nasal membrane (*b'*); on the lower mandible, the membranous band (*f'*) and the sheathless chin (*g'*).

"2. The anterior part has undergone no modification; it remains as it was in the breeding season.

"The rosette at the gape is reduced to a narrow band of pale yellow. The free edge of the eyelid has lost colour, and the horny flakes are wanting."

Dr. Bureau here furnishes a *tableau* in which these two conditions of *Fratercula arctica* in spring and winter, as well as the slight modifications which the plumage undergoes at those seasons, are set forth in parallel columns. He then proceeds, under the head of "Transformation du Bec," to point out the mode in which the various pieces of the beak are respectively shed or cast.

The adult bird, he observes, owes its summer dress to phenomena of three kinds—hypertrophy, formation of horn, and coloration; and loses it under the influence of three inverse phenomena, namely, atrophy, loss of horny substance, and loss of colour.

He concludes by showing that analogous phenomena occur in the allied species *Fratercula glacialis*, *F. corniculata* and *Lunda cirrata*.

EXPLANATION OF PLATE.

- FIG. 1. *Fratercula arctica*, adult male, in spring, or during the breeding season (natural size). Coast of Brittany, 6th June, 1876. (Coll. Dr. Bureau.)
- FIG. 2. *Fratercula arctica*, adult male, in winter or after the breeding season (natural size). Cape Ferret, near Arcachon, Gironde, 4th March, 1873. (Coll. Dr. Marmottan.)
- FIG. 3. *Fratercula arctica*, undergoing the moult (enlarged to twice the natural size).
- FIG. 4. *Fratercula arctica*. Adult assuming the nuptial appendages.
- FIG. 5. Horny pieces which fall off after the breeding season.

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BIRD MIGRATION IN THE SPRING OF 1878.

BY JOHN CORDEAUX.

THE following notes, although perhaps not containing anything of special importance, will be interesting to British ornithologists, showing as they do the almost continual stream of migrants which passed Heligoland for many weeks in succession during the spring of the year. They were sent to me from time to time by that indefatigable observer, Mr. Gätke, and are taken from his own notes and observations.

The autumn migration of birds southwards in 1877 was greatly prolonged beyond the usual period; and from Mr. Gätke's notes it appears that, even as late as the commencement of February, all the birds had not left the North of Europe, many laggards remaining after the usual period of migration. This abnormal state of affairs was probably induced by the extremely mild winter of 1877-78 in Scandinavia. Food continuing accessible, and the weather being not too severe, some of the more hardy species seem to have delayed their journey southward until the early part of 1878, when the sudden outburst of severe weather towards the end of January sent the loiterers southward with a rush. It will be seen that scarcely had the down-stream ceased, before the return flood set in, and continued, with but slight intermissions of unfavourable

wind and weather, for the rest of the season. February was a most unusually mild month, many days being equal in temperature to what we expect at the end of May. This spring-like weather had the effect of inducing an earlier migration of the more hardy species. The same phenomena were observable, although to a less extent, on our own shores, and I noticed that the immense flocks of Golden and Green Plover frequenting our Lincolnshire marshes broke up and took their departure some time in advance of the average period.

Mr. Gätke's notes commence with the end of January, and are continued as follows:—

"January, night, from 27th to 28th. *Turdus pilaris*, countless flights.

"29th, from 9 A.M. and earlier to 4 P.M. *Colymbus septentrionalis*; an uninterrupted stream of birds from N.N.E. to S.S.W. passing to the east of this island; constantly from eight to twelve in the field of the glass.

"February 2nd, wind E. in the morning, N. and N. by E. in the evening. *Turdus merula*, from twenty to forty, as I fancy from the north.

"7th. Commencement of spring migration. Birds moving northward again; wind westerly. *Motacilla sulphurea*, first migration; *Sturnus vulgaris*, flights twenty to sixty; *Corvus*, coming, ten to twenty. Night, 7th to 8th. *Alauda arvensis*, a great many.

"8th. *Alauda arvensis*, off island, passing fishing-boats all day E. by N.

"9th, wind N.W. and N., fog; midday somewhat clear. *Alauda arvensis* seen passing overhead in great numbers, E. by N.; *Turdus merula*, some; *Sturnus vulgaris*, some.

"10th, wind W. and mild. *Alauda arvensis*, during night and day; *Columba palumbus*, one; *Turdus musicus*, a few.

"13th, wind S. *Columba palumbus*, ten to twelve.

"14th to 15th, S.W., night. *Charadrius auratus* and *Tringa alpina*.

"15th, W.S.W. *Alauda arvensis*, great numbers at sea, N.E.; *Anthus pratensis*.

"16th to 17th, W., foggy. *Alauda arvensis*, a great many.

"February 18th, W. *Alda arvensis*, a great many; *Turdus merula*, ten to twenty; *Corvus frugilegus*, about one hundred; *Fringilla cannabina*, pretty numerous; *Saxicola rubicola*, two; *Charadrius vanellus* and *auratus*, many; *C. hiaticula*, one.

"19th, westerly, clear. *Turdus merula*, fifty to sixty at least; *T. viscivorus*, twenty to twenty-five; *Saxicola rubicola*, four to six; *Charadrius vanellus*, some.

"20th to 21st, W., cloudy. *Turdus merula*, pretty numerous; *Charadrius auratus*, *T. alpina*, *Turdus*, *Alda*, at lighthouse.

"22nd, W., cold. Nothing.

"23rd, W., cloudy, cold. *Sturnus vulgaris*, flights from twenty to sixty; *A. arvensis*, many; *arborea*, some; *Charadrius vanellus*, some.

"26th, N.W., cold. *Turdus merula* and *viscivorus*, some.

"27th to 28th, night, westerly, at lighthouse. *Alda arvensis*, *T. merula*, *Tringa*, *C. auratus*, *Vanellus*, *Hæmatopus ostralegus*, *Regulus ignicapillus*, some; during day time nothing.

"28th to March 1st, westerly, at lighthouse. *Sturnus vulgaris*, thousands; *Alda*, *Turdus*, *Tringa*; *C. hiaticula*, beginning.

"March 1st, W., alternately fog. *Motacilla lugubris*, one or two.

"2nd to 3rd, fog. Nothing.

"4th, W., clear. *Accentor modularis*, several, the first of the season; *Saxicola rubicola*, six to ten; *Turdus merula*, fifty to one hundred.

"10th. Last week birds were next to none, which has been occasioned by prevailing fogs. On the 8th a storm (N. by W.) about 9 A.M., approaching N.W., very heavy. On the 4th six to ten *Saxicola rubicola* and the first *Accentor modularis* of the year; on the 5th ten to fifteen *S. rubicola*. Starlings, Lapwings and Larks, as also Golden Plover have passed over in immense numbers during all the nights. Blackbirds are not on a regular move, because the sexes are promiscuously mixed; these birds have been turned by the unseasonable weather.

"31st. Nothing but N.N.W., N. and N.E. winds; cutting cold, sleet and hail in abundance, and of course no birds. Whilst all the rest are wanting, there are more this spring of Stonechats than I recollect having seen for years. The Gold-crested Wren comes every spring (March) in sufficient numbers to rank it with the common customers, although not by tens of hundreds, or even tens of thousands, as sometimes in autumn (October and November).

"In April, Rooks, Jackdaws and Hooded Crows, from the 9th to the 15th daily, in large numbers. *Saxicola rubicola* last seen on the 3rd. *P. rufus* and *M. flava*, some daily since the 13th. *Hirundo rustica*, first on the 19th, only two or three since. *Sterna cantiaca*, daily, lots of them. *Charadrius morinellus*, three on the 17th. Of the *Curruca* family, not one as yet turned up. Wrynecks and Hoopoes, a few. *Fringilla cœlebs*, *cannabina* and *chloris*, lots for ever so long; *montifringilla*, less than usual. Taken altogether it is undoubtedly bad; if weather does not turn warm, with a S.E. and S.S.E. wind, there will be nothing."

On the north-east coast of Lincolnshire I have seen fewer migrants than has been the case for many previous years. Having had but slight intervals of cold N. and N.E. winds, and but few days of really bad weather to retard them, the birds have gone forward at once, without tarrying in our marshes; consequently there has been no accumulation in the coast district as is generally the case. This has been particularly apparent with the Fieldfares, which not unfrequently hang about in great flocks for weeks before taking their departure. This year I have scarcely seen any.

I extract from my note-book the dates of arrival of our summer migrants in this district:—

On the 7th February Mr. Bailey, of Flamborough, writes, "I have just spoken to one of our fishermen, who has come in from sea, who informs me the sea was alive with Guillemots this morning."

February 16th. Larks singing at 6.30 A.M. Lovely spring-like weather.

23rd, W.S.W., warm, close, and overcast. Large flights of migratory Starlings on the coast.

28th. *Anthus pratensis*, have returned to their nesting haunts.

March 1st. *Charadrius pluvialis* and *Vanellus cristatus*, have broken up their flocks and left the district; the latter in small bands of from twenty to thirty.

2nd, wind W.S.W. *Turdus pilaris*, many; *Emberiza miliaria*, flocks twenty to thirty.

10th, W., very fine and warm. *Motacilla Yarrelli*, many; *Saxicola rubicola*, one.

April 2nd. Hooded Crows have departed; only four laggards seen after this date.

9th, strong E. wind, and bitterly cold. *Hirundo rustica*, one.

April 15th, S., mild and warm. *Phylloscopus trochilus* heard; *Hirundo rustica*, several.

17th, S., warm. *Motacilla Rayi* and *Sylvia cinerea*.

18th. *Hirundo riparia*.

20th, S., warm. *Saxicola œnanthe*, one, a male.

26th, N.E., cold. *Cuculus canorus*.

30th. *Saxicola rubetra*.

May 1st. *Salicaria phragmitis*; *Hirundo urbica*, two.

3rd. *Anthus arborea*.

9th. *Sylvia hortensis*.

14th. *Muscicapa grisola*.

16th. Grey Plover, Whimbrel and Dunlin on Humber flats; the former very numerous and in full breeding or summer plumage. No waders or shore birds seen after this date.

18th. *Cypselus apus*, many.

I have neither seen nor heard of any Dotterel (*Endromias morinellus*) this season.



THE MAMMALS OF SHAKSPEARE.

BY HENRY REEKS, F.L.S., F.Z.S.

(Continued from p. 205.)

THE FOX, *Vulpes vulgaris*.

That most enjoyable of all sports, fox-hunting, in the proper acceptation of the term, appears to have been unknown in Shakspeare's time. Poor Reynard's name is generally applied as an epithet, denoting a low, cunning, selfish and disreputable person. "Vulpecides," in those days, were evidently looked upon as benefactors to mankind in general, and to the British farmer and poultry keeper in particular. The time-honoured fable of the "Fox and the Grapes" crops up in *All's Well that Ends Well*, Act ii., Scene 1.

The fox is mentioned upwards of thirty times, but a couple of quotations illustrating his fondness for lamb (and he is no bad judge either!) will be sufficient.

"The fox barks not when he would steal the lamb."

King Henry VI., Part II. Act iii., Scene 1.

"Alas, poor Proteus! thou hast entertain'd
A *fox* to be the shepherd of thy lambs."

Two Gentlemen of Verona. Act iv., Scene 4.

Amongst the *Mustelidæ*, Shakspeare alludes to the sable, fitchew (polecat), ferret, weasel, otter, and badger or "brock."

THE SABLE, *Martes zibellina*.

Hamlet, speaking ironically, though bitterly, of the short time that had elapsed since the death of his father, says—

"So long? Nay, then, let the devil wear black, for I'll have a suit of *sables*."

Hamlet. Act iii., Scene 2.

THE POLECAT, *Putorius fœtidus*.

Shakspeare mentions the "fitchew" or polecat sometimes as an epithet, but never to denote anything very nice or enviable. In *Troilus and Cressida*, Act v., Scene 1, Thersites, to show his detestation of Menelaus, exclaims:—

"To be a dog, a mule, a cat, a *fitchew*, a toad, a lizard, an owl, a puttock, or a herring without a roe, I would not care; but to be Menelaus—I would conspire against destiny."

THE FERRET, *Putorius furo*.

The word "ferret" we find applied as a verb adjective, and adjective; it is probable that ferrets were introduced into the country before the poet's day; in fact, the second quotation given below tends to prove that the animal was well known to him:—

BOY. He says his name is Master Fer.

PISTOL. Master Fer! I'll fer him, and firke him, and *ferret* him: discuss the same in French unto him.

BOY. I do not know the French for fer, and *ferret*, and firke."

King Henry V. Act iv., Scene 4.

"BRUTUS. * * * And Cicero

Looks with such *ferret* and such fiery eyes,

As I have seen him in the Capitol,

Being cross'd in conference by some senators."

Julius Cæsar. Act i., Scene 2.

THE WEASEL, *Mustela vulgaris*.

The old axiom of "Give a dog a bad name and hang him" may be well bestowed on our poor little friendly weasel. That he is an egg-sucker no one would be rash enough to deny; but I know, from personal knowledge of his habits, that the good he does in the destruction of field mice far outbalances any harm he may do to the young of game or poultry. I never destroy a weasel or allow one to be destroyed if I can prevent it, yet I defy any one to show a better head of either ground or winged game on the same extent of open country than I can. That the weasel bore a bad character, even in Shakspeare's time, will appear from the following quotations.

Its propensity for eggs is referred to by the melancholy Jaques, who says—

"I can suck melancholy out of a song, as a *weasel* sucks eggs."

As You Like It. Act ii., Scene 5.

"As quarrelous as a *weasel*" (*Cymbeline*, Act iii., Scene 4) may be termed a Shakspearian proverb.

Even at the present day, many sportsmen and country people, who really ought to know better confuse this animal with the weasel; we are, therefore, less surprised that Shakspeare does not mention the stoat or ermine. No doubt much of the mischief attributed to the weasel could be rightly laid to the credit of its larger and more powerful congener, the stoat.

THE OTTER, *Lutra vulgaris*.

Only once do we find that Shakspeare mentions the otter, and then apparently only to record the ancient belief that it was a very mysterious animal—a kind of hybrid between fish and beast. That he was better informed is pretty evident from the fact of his entrusting the description of it to our amusing friend Falstaff (*Henry IV.*, Part I., Act iii., Scene 3).

THE BADGER, *Meles taxus*.

The very cruel practice, unworthy the name of sport, of badger-baiting, could scarcely have been indulged in in Shakspeare's time, otherwise we should probably find some allusion to it. Once only does our poet mention this poor persecuted animal, under its more

northern provincial name of "brock," and then only as an epithet. In the amusing play *Twelfth Night* (Act ii., Scene 5), Malvolio, reading a letter purposely dropped for his perusal, puts on airs, and places such a construction on the contents of the letter as to annoy Sir Toby Belch, who exclaims, but not loud enough for Malvolio to hear him, "Marry, hang thee, *brock*!"

THE BROWN BEAR, *Ursus arctos*.

Either this species or *U. isabellinus* would probably be the bear with which Shakspeare would be most familiar. Bear-baiting seems to have been a very popular amusement about that period and for many years subsequently. If I remember rightly, there was a "bear garden" situated somewhere on the south side of the Thames, not far from the south end of one of the bridges—Southwark, I think. I have seen it marked in old maps of London. Some account of "bear gardens" may be found in Strutt's 'Sports and Pastimes.'

In the *Merry Wives of Windsor* (Act i., Scene 1), Slender asks of Anne Page—

"Why do your dogs bark so? Be there *bears* i' the town?"

ANNE. I think there are, sir; I heard them talked of.

SLENDER. I love the sport well; but I shall as soon quarrel at it as any man in England. You are afraid if you see the *bear* loose, are you not?

ANNE. Ay, indeed, sir.

SLENDER. That's meat and drink to me now. I have seen Sackerson* loose twenty times, and have taken him by the chain; but, I warrant you, the women have cried and shriek'd at it, that it passed; but women, indeed, cannot abide 'em: they are very ill-favoured rough things."

Again, in *Twelfth Night* (Act i., Scene 3), Sir Andrew Aguecheek, in lamenting his lack of education, exclaims—

"What is *pourquoi*? do, or not do? I would I had bestowed that time in the tongues, that I have in fencing, dancing, and *bear-baiting*."

Shakspeare mentions bears upwards of fifty times. The following spirited description may probably be intended for "a find" with a Syrian bear, *Ursus isabellinus*:—

"HIPPOLYTA. I was with Hercules and Cadmus once,
When in a wood of Crete they bay'd the *bear*
With hounds of Sparta: never did I hear

* The name of a celebrated fighting bear.

Such gallant chiding, for, besides the groves,
 The skies, the fountains, every region near
 Seem'd all one mutual cry : I never heard
 So musical a discord, such sweet thunder."

In a notice of the quadrupeds mentioned by Shakspeare, some allusion should be made to the marine Mammalia. Whales are often mentioned; sometimes as the "huge leviathans" (*Two Gentlemen of Verona*, Act iii., Scene 2), but it will be sufficient to give a couple of quotations and identify the species referred to as—

THE GREENLAND WHALE, *Balæna mysticetus*.

The following apt simile occurs in *Pericles* (Act ii., Scene 1):—

"3RD FISHERMAN. * * * Master, I marvel how the fishes live in the sea.

1ST FISHERMAN. Why, as men do a-land—the great ones eat up the little ones. I can compare our rich misers to nothing so fitly as to a *whale*: 'a plays and tumbles, driving the poor fry before him, and at last devours them all at a mouthful: such *whales* have I heard on o' the land, who never leave gaping, till they've swallowed the whole parish, church, steeple, bells, and all."

Of course poor Falstaff could not escape the opprobrious epithet of "whale." Mrs. Ford asks—

"What tempest, I trow, threw this *whale*, with so many tuns of oil in his belly, ashore at Windsor?"

Merry Wives of Windsor. Act ii., Scene 1.

THE DOLPHIN, *Delphinus delphis*.

We often find the mythical "mermaid" associated with such friends as the seals and dolphins; so Shakspeare says, through Oberon—

"My gentle Puck, come hither. Thou remember'st
 Since once I sat upon a promontory,
 And heard a mermaid on a *dolphin's* back,
 Uttering such dulcet and harmonious breath,
 That the rude sea grew civil at her song;
 And certain stars shot madly from their spheres,
 To hear the sea-maid's music."

Midsummer Night's Dream. Act ii., Scene 2.

THE PORPOISE, *Phocæna communis*.

The superstition of many old seafaring men is well shown in the following quotation—the only instance wherein Shakspeare mentions the porpoise:—

“1ST FISHERMAN. Alas, poor souls! it grieved my heart to hear what pitiful cries they made to us to help them, when, well-a-day, we could scarce help ourselves.

3RD FISHERMAN. Nay, master, said not I as much when I saw the *porpus*, how he bounced and tumbled? They say they are half fish, half flesh: a plague on them! they ne’er come, but I look to be washed.”

Pericles. Act ii., Scene 1.

(To be continued.)

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ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

ON the 7th March, wind N.N.W., blowing strong but fine, Black Redstarts were still on the coast, and Titlarks might be seen mounting in the air as in the breeding season. Curlews were on the move, and very clamorous when passing overhead at night. By the 14th, Grey Wagtails had assumed the black throat, Herring Gulls and some Razorbills were in full breeding dress, and Lesser Black-backed Gulls were plentiful, in pairs; adult Mews had also arrived, but the Black-headed Gulls had by that date left for their breeding quarters. Great Black-backed Gulls were not so numerous as usual this season, no doubt owing to the mildness of last winter.

I feel confident that on March 14th I saw Richard’s Pipit on the grassy slope of a cliff, but did not get very near in consequence of its flying off inland immediately it caught sight of me. However, I think I could hardly have been mistaken, being so well acquainted with the appearance and flight of the species in a wild state, having at different times met with no less than seven examples in the neighbourhood of Plymouth, besides two others that were brought to our birdstuffers in the flesh. Two or three Greater Spotted Woodpeckers were seen in this locality about the same date. On

the 29th there was a tremendous gale from the E.N.E., with heavy showers of snow, notwithstanding which I observed a solitary Sand Martin arrive from sea, flying northwards; and the same afternoon many Wheatears made their appearance on the coast.

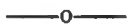
On April 2nd there were some Golden Plovers in the market with completely black breasts; and on the same day I visited a Raven's nest on the coast near Bovisand, in which were three young birds, fully fledged, looking nearly as large as their parents, who kept flying round, croaking, falling, and turning nearly over in the air in great excitement. I also watched a pair of Red-throated Divers, in full breeding plumage, swimming off the rocks in the Sound—rather a late date for them to remain in this locality. I may here remark that Red-throated Divers have become very scarce on our immediate coast within the last few years.

On April 27th I visited the cliffs at Wembury, and found all the Herring Gulls assembled at their usual nesting place, but observed only one nest. I have no doubt, however, that there were many others which could not be seen. There were some splendid Crested Shags, in full breeding plumage, on the rocks below, and many Kestrels about, but, I am sorry to say, no Peregrines.

Half-a-dozen Swifts made their appearance on May 1st, hawking for insects rather high in the air over Stonehouse, and by the following day many flocks of Whimbrels had arrived on the banks of the River Lynher. I understand, however, that some were heard passing overhead nearly a week previously. On the 4th I remarked a White Wagtail, *Motacilla alba*, in a newly-ploughed field, and again paid a visit to the Raven's nest, but found the young had flown. A dealer in live birds at Plymouth showed me a fine young Raven which had been sent from Cornwall, and told me that the coastguardsman, who had taken it when robbing another nest a few days afterwards, had fallen from the cliff and was killed on the spot. Six lives have already been sacrificed during the past month in taking the eggs and young of Ravens and Gulls—four on the coasts of Devon and Cornwall, and two at St. Abb's Head, on the coast of Scotland. By the way, I do not understand why the eggs of sea-fowl are not protected as well as the birds themselves. The Lesser Black-backed Gulls by this date had almost all left for their breeding stations, and so had the Mews, but I do not know a nesting locality for either species on the coasts of Devon or Cornwall, certainly not within a great many

miles of Plymouth. A short time since I remarked two immature Herring Gulls pecking at and apparently feeding on some decayed cabbage-leaves which had been left on a mudbank by the receding tide—a habit I had never before witnessed in any of the Gull tribe.

Early in May I visited the breeding haunts of the Herring Gulls at Rhame Head, on the coast of Cornwall, a few miles from Plymouth, and found a great many birds sitting, but could see no young. Several Ravens and Kestrels were flying about the locality. A friend told me that some time since he shot a gull, in the gizzard of which he found a large whiting-hook firmly fixed, but, judging from the condition of the bird, it did not appear to have suffered any ill effects.



OCCASIONAL NOTES.

HUNTING THE WILD CAT.—At page 202, Mr. Henry Reeks has expressed the opinion that hunting the wild cat was never considered royal sport, for otherwise it would have been noticed by Shakespeare. In this I venture to think he is mistaken, for in many old royal grants which I have met with, giving license to enclose and liberty to hunt, the wild cat is particularly mentioned and included amongst the beasts of chase. William Beriwere, who was a great favourite with King John in consequence of his knowledge in the art and mysteries of venery, received a license from that monarch to enclose his woods at Joare, Cadeleghe, Raddon, Ailesberie and Burgh Walter, with free liberty to hunt the hare, fox, *cat*, and wolf throughout all Devonshire.* From a charter of liberties granted by the same King, when Earl of Morton, to the inhabitants of Devonshire, it appears that the wild cat was at that time included amongst the “beasts of venery” in that county. The original deed, which is still preserved in the custody of the Dean and Chapter of Exeter, is under seal, and provides *inter alia* as follows:—“Quod habeant canes suos et alias libertates, sicut melius et liberius illas habuerunt tempore ejuset. Henrici regis et reisellos suos, et quod capiant capreolum, vulpem, *cattum*, lupum, leporem, lutram, ubicunque illa invenirent extra regardum forestæ meæ.”† In 1286 one carucate of land in the county of Huntingdon was held by the serjeanty of hunting the wolf, fox and *wild cat*, and driving away all vermin out of the forest of the King in that county.‡

* Dugdale's ‘Baronage,’ vol. i., p. 701.

† “Ex Autographo penes Dec. et Capit. Exon.” From Bp. Lyttelton's Collections. Quoted by Pennant, ‘British Zoology,’ vol. ii., p. 308 (1812).

‡ Plac. Coron. 14 Edw. I., Rot. 7, dorso; Blount, ‘Ancient Tenures,’ p. 230.

In 1297 John Engaine died, seized, *inter alia*, of certain lands in "Pytesle," in the county of Northampton, found to be held of the King by the service of hunting the wolf, fox, *wild cat*, badger, wild boar, and hare; and likewise the manor of Great Gidding, in the county of Huntingdon, held by the service of catching the hare, fox, *wild cat*, and wolf, within the counties of Huntingdon, Northampton, Buckingham and Rutland.* In 1368 Thomas Engaine, dying without issue, was found to be seized of fourteen yardlands and meadow, and 14s. 4d. rent, in Pighesle, in the county of Northampton, held by the service of finding, at his own proper cost, certain dogs for the destruction of wolves, foxes, martens, *wild cats*, and other vermin within the counties of Northampton, Rutland, Oxford, Essex and Buckingham.† During the reign of Henry IV., Sir Thomas de Aylesbury, knight, and Catherine his wife, held of the King, *in capite*, the manor of Laxton, *inter alia*, with the appurtenances in the county of Northampton, by "grand serjeanty," *viz.*, by the service of taking wolves, foxes, *wild cats*, and other vermin in certain counties named. Robert Lindsay, in his 'Chronicles of Scotland' (vol. ii., p. 346), informs us that in 1528 the Earl of Athol entertained King James V. with a great hunt which lasted three days. "It is said, at this tyme, in Atholl and Stratherdail boundis, thair was slaine threttie scoir of hart and hynd, with other small beastis, sich as roe and roebuck, woulff, fox and *wyld cattis*." A century later, Sir Robert Gordon, in his 'Genealogical History of the Earldom of Sutherland from its origin to the year 1630,' especially mentioned the wild cat amongst the beasts of chase in Scotland at that period. He says the forests and "schases" in the county of Sutherland were "verie profitable for feiding of bestiall, and delectable for hunting, being full of reid-deer and roes, woulffs, foxes, *wyld cattis*, brocks, skuyrells, whittrets, weasels, otters, martrixes, hares, and fumarts." Much more evidence of this kind might, no doubt, be adduced, but the above will perhaps suffice to illustrate the point in question.—J. E. HARTING.

WEASEL CARRYING ITS YOUNG.—I was told by Mr. John Wise, of Malton, land surveyor, that as he was surveying at Bainton some years ago he saw an old weasel carrying a young one in her mouth. He aimed a blow at her with his staff, but missed her, causing her, however, to drop the young one and run away a short distance. He picked up the young one, and found that it was fast asleep. The old one had now come back, and was running about his legs in a very excited way. He woke up the young one, when it immediately "showed fight," and would have bitten him

* Dugdale's 'Baronage,' vol. i., p. 466. See also the 'Rotuli Hundredorum,' ii., p. 627.

† Rot. fin. 42, Edw. III., m. 13. Dugdale's 'Baronage,' vol. i., p. 467; and Blount 'Ancient Tenures,' p. 231.

had he not dropped it, whereupon the mother took it up again and ran off with it.—WALTER STAMPER (Oswaldkirk, York).

GOATS EATING TOBACCO.—Mr. Reeks mentions (p. 206) a case of a goat eating tobacco with impunity. I can confirm this statement. A goat belonging to Mr. Barr, yacht-builder, of Wivenhoe, was very fond of eating tobacco, and if a pouch was shown to him would follow the owner about until he had some tobacco given him. I have frequently given him half-an-ounce, and on one occasion I left my pouch, containing between two and three ounces, open within his reach, which in a few minutes he cleared without doing him the least harm.—A. H. SMEE (7, Finsbury Circus).

CATTLE EATING YEW.—*Apròpos* of the notes which have already appeared on this subject (pp. 177, 206, 207) it may be observed that Gilpin, in his 'Remarks on Forest Scenery' (Sir T. D. Lauder's edition, vol. i., p. 191), states that "Cattle and sheep eat yew twigs greedily, and with impunity when they crop them from the tree or bush. But these animals have been frequently poisoned by eating the clippings of a yew hedge which have lain for a little time. This can only be accounted for by the supposition that some chemical change takes place in the arrangement of the juices of the plant, which generates a poison not pre-existing in it." Gilpin is mistaken, however, in supposing that the poisonous effects result only from cropping the living tree. In addition to the instances already cited (p. 177), I am reminded of an accident which occurred in Yorkshire a few years since, when three valuable horses were destroyed by eating the leaves of a growing yew tree, which they had been incautiously allowed to get at through the carelessness of a tenant in not repairing his fences.—J. E. HARTING.

NOTES FROM THE ISLE OF WIGHT.—Though nothing rare has occurred here of late, Mr. Smith, the Newport taxidermist, has received a Little Bittern which was picked up at Brixton, in a dying state, on the 2nd of May last year. It is a male, in perfect plumage, $15\frac{1}{2}$ inches in length, and $21\frac{1}{2}$ inches in extent of wing. Swallows, this spring, were unusually late in appearing here, none having been observed till the middle of April, and no Martins till the beginning of May. Both species have become less numerous of late years, and few breed here now, though they are to be seen in countless numbers during the autumnal migration. Neither Chiffchaff nor Willow Wren was seen till the first week in April. Several Swifts were observed on the 9th of May flying about the Carisbrook church-tower. Young Starlings were first seen on the wing on the 25th of May. How the young manage to fly up or creep up chimney-pots over three feet in height is wonderful, but their very powerful claws and sharp nails no doubt aid them in doing so. I may record here the strange death of a

House Sparrow, lately found hanging by one leg from the branch of a tree in the garden, the claws having become entangled in a confused mass of thread which it was in the act of conveying to the nest. A white Sparrow has lately been observed here, and some are met with in most seasons, but these are invariably birds of the year, the white disappearing wholly or in part after the first moult. A nest of the Great Tit was lately found in a hollow pedestal, the entrance to which was but an inch and a quarter in diameter; and though the pedestal was removed and then replaced, the birds did not forsake the nest, and the six eggs were duly hatched. A pair of Robins built a nest and reared their young in a spare room of a house in the town, having entered by a broken window. The nest was placed on an iron bedstead resting against the wall. — HENRY HADFIELD (Ventnor, Isle of Wight).

ABNORMAL NESTING OF THE NUTHATCH.—While staying with my uncle, Colonel C. L. Cocks, about three miles west of Liskeard, I observed, on May 24th and following days, a Nuthatch frequently going in and out of a small hole in the perpendicular face of a bank opposite the front of the house, perhaps twenty feet from the ground, and three or four from the top, in which it evidently had a nest with young hatched. On referring to "Yarrell" (3rd edition), I find he only mentions holes in trees as the site of their nests; and the Rev. C. A. Johns, in his "British Birds in their Haunts," says the nest is "invariably placed in the hole of a tree." Liskeard is also mentioned by Yarrell as the most westerly point where they are generally found. My uncle called my attention to the fact of their feeding on the grubs in oak-apples; and I subsequently picked up several which had been pecked by a bird's beak, and the grubs were gone; and though I did not actually see a Nuthatch at work upon one, I think it will be allowed that they are by far the most likely birds to have done this,—far more so than the tits.—ALFRED H. COCKS (Great Marlow, Bucks).

[Some years ago, we remember to have seen the nest of a Nuthatch in a brick wall. The birds entered by an opening left by a displaced brick; and this hole being too large to please them, they reduced it by plastering mud all round the edge until it was just large enough to admit the birds. A still more remarkable nest of the Nuthatch came under our observation a year or two later. This nest was formed entirely of clay, and was of considerable size and weight. It was built in a haystack, where the grass-stems and bents, passing through the clay at intervals, contributed to support it in its singular position. A notice and engraving of this nest was, at our request, published in 'The Field' at the time.—ED.]

CHIFFCHAFF'S NEST IN A HOLLY.—In the last week in May I found a Chiffchaff's nest three feet above the ground in a young holly in the wood called St. Catherine's, close to Lucan. It was made of the materials of

which the Chiffchaff's nest is usually composed, and contained six eggs. Professor Newton mentions, in his edition of Yarrell, two instances in which this bird has been known to build in other situations than on the ground, and also refers to an instance of the Willow Wren having built at some distance from the ground. Probably these two species may nest off the ground more frequently than has been observed, or perhaps they may have done so, hoping to be more secure, after having had their nests on the ground destroyed or robbed.—J. E. PALMER (Lucan, Co. Dublin).

HOW TO FORM A ROOKERY.—Our gardener once told me that he had on different occasions induced Rooks to build near a house in trees where previously there had been no nests, by fixing, in the fork of a branch near the top of the tree, round platforms of strong twigs. These were made out of old besoms or brooms, and served as foundations for the nests.—WALTER STAMPER (Oswaldkirk, York).

NESTING HABITS OF THE WATER OUZEL.—In reference to the breeding of the Water Ouzel (p. 213), the 9th of April is by no means an early date on which to take the full complement of eggs. Here they build and many lay before the end of March, and it is no unusual thing to find eggs by the middle of that month. On the 4th April last, a friend and I found some six or seven nests. One had no eggs in it, two others had full complements of freshly-laid eggs; another had eggs hard set; and two more had young birds.—J. A. HARVIE-BROWN (Dunipace House, Larbert, N. B.)

EARLY NESTING OF THE KINGFISHER.—With regard to the date of laying by the Kingfisher (p. 214), I have taken fresh eggs from a nest here on the 25th April. The tunnel was remarkably dirty, and the fish-bones in it were rotten and crawling with maggots.—ID.

TURTLE-DOVES BUILDING NEAR A DWELLING-HOUSE.—As usual, a pair of Turtles (*Columba turtur*) are breeding in my grounds. They were first heard on or about the 1st of June, and are nesting in a Wych Elm not very far from the house.—THOMAS BELL (The Wakes, Selborne).

OCCURRENCE OF THE GREY PHALAROPE IN CORNWALL IN MAY.—This Phalarope, *Phalaropus platyrhynchus*, was shot near Par a short time since with its summer plumage almost assumed, the under parts being—with the exception of a small admixture of white on a portion of the breast—of a brownish red from the chin to the vent. I do not know of a single instance of this species remaining in the southern latitudes in the breeding season—certainly there is no recorded instance of its occurrence in Cornwall during that season. It appears pretty regularly in the autumn and sometimes late on in the winter on our coasts in uncertain numbers. Singularly enough, the specimen now under notice has only one leg; the other is entirely gone, and nothing remains to show that the limb ever existed. Whether this has

anything to do with its southern migration I cannot say, but the bird appeared in other respects perfect in form and condition.—E. H. RODD (Penzance).

[The Grey Phalarope, when going northward to breed in spring, apparently travels by a different route to that which it takes when migrating southward in autumn. At the latter season it passes through the British Islands often in large numbers, but in spring it is very rarely seen in the red plumage. This change of route is very curious, and deserves investigation.—ED.]

CUCKOO LAYING TWO EGGS IN ONE NEST.—About two years ago, I found two Cuckoo's eggs in a Hedge-Sparrow's nest, both apparently laid by one bird, as neither was similar to any other Cuckoo's egg I have ever taken, but more resembled the Pied Wagtail's eggs in colour. I mention this as in the Introduction to "Montagu's Dictionary of British Birds," it is stated that "Where two eggs have been found in one nest, they certainly were laid by different birds." I think the above affords strong proof that one Cuckoo does sometimes lay two eggs in the same nest.—ARTHUR BEALE (Chiddingstone, Kent).

BLACKCAP IN COUNTY DUBLIN.—On two occasions, during the second week in June, I observed a male Blackcap warbler (*Sylvia atricapilla*) in my garden by the Liffey, near Lucan, Co. Dublin. On both occasions it was feeding on cherries, under a net which hung in the tree. I never saw it in this county before.—J. F. SHACKLETON (Anna Liffey House, Lucan).

[The Blackcap, although a regular summer visitant to Ireland, appears to be very local there.—ED.]

A NEW FOSSIL BIRD.—From a recent Bulletin of the 'United States Survey of the Territories,' it appears that the remains of a passerine bird of high organisation have been discovered at Florissant, in Colorado. Although certain portions of the head are wanting, the remains include the greater part of the skeleton and nearly all the bones of the anterior and posterior extremities. The impressions of the wings and tail on the rock are so clear as to show even the shafts and barbs of the feathers. The bird was evidently of arboreal habits and well-developed powers of flight, and although the absence of bill renders it impossible to decide with certainty the family to which the species may have belonged, it is thought to be allied to the Finches. Mr. J. A. Allen has described it under the name *Palæospiza bella*.

A RARE CRUSTACEAN FROM MOUNT'S BAY, CORNWALL.—I have just had brought to me the tubes of a large colony of *Cerapus* of some sort, found attached to a rock near St. Michael's Mount. I am unable to determine the precise species, as my informant, with the best possible intentions,

carefully removed every single inhabitant before he brought the specimens to me, but his account of how he removed them fully bears out the quarrelsome character given by naturalists to *Cerapus abditus*. He tickled them with a shoemaker's bristle until they grabbed it, and then he dragged them out. As far as I can ascertain, this is the first record of the occurrence of this Crustacean in Mount's Bay. My informant says he saw another colony close by the first, both just under dead low water at spring tides.—THOMAS CORNISH (Penzance).

DEATH OF MR. W. C. HEWITSON, F.L.S.—It is with regret that we have to announce the death of William Chapman Hewitson, the well-known author of a standard work on British Birds' Eggs. Born in 1806, in the North of England, he acquired an ardent taste for Natural History, and in his early studies was associated with Mr. John Hancock, of Newcastle-on-Tyne, an equally well-known ornithologist, with whom he made a tour in Norway, for the purpose of studying the nidification of several birds, such as the Redwing and Fieldfare, whose eggs at that date were undescribed, although the birds themselves as annual winter visitants to this country were well known. In this tour he was very successful, and British ornithologists owe him a debt of gratitude for the many additions which he was instrumental in making to their knowledge of Oology. He was quite as well known as an entomologist, and as the owner of a splendid collection of exotic butterflies, which he has bequeathed to the British Museum. In conjunction with the late Edward Doubleday, he commenced an illustrated folio work on 'The Genera of Diurnal Lepidoptera,' which he supplemented by another work in five quarto volumes on 'Exotic Butterflies.' The illustrations to these works, as well as to many separate articles in various periodicals, were all drawn by himself, and are admitted by entomologists to be unequalled for accuracy of detail and beauty of colouring. Those who had the pleasure of his acquaintance will regret that they can no more share the genial hospitality and pleasant welcome which was always accorded to them at his beautiful home in Oatlands Park, where, at the ripe age of seventy-two, he died on the 28th May last.

DEATH OF PROFESSOR HENRY.—Another naturalist has passed away in the person of Professor Joseph Henry, LL.D., the Secretary and Director of the Smithsonian Institution, Washington, who died in that city on May 13th last. Professor Henry was born in Albany, in the State of New York, December 17th, 1799. He became Professor of Mathematics in the Albany Academy in 1826; Professor of Natural Philosophy in the College of New Jersey, at Princeton, in 1832; and was elected the first Secretary and Director of the Smithsonian Institution in

1846. He received the honorary degree of Doctor of Laws from Union College in 1829, and from Harvard University in 1851. He was President of the American Association for the Advancement of Science in 1849; was chosen President of the United States National Academy of Sciences in 1868; President of the Philosophical Society of Washington in 1871; and Chairman of the Lighthouse Board of the United States in the same year; the last three positions he continued to fill until his death. Prof. Henry made contributions to science in electricity, electro-magnetism, meteorology, capillarity, acoustics, and in other branches of physics: he published valuable memoirs in the Transactions of various learned societies of which he was a member; and devoted thirty-two years of his life to making the Smithsonian Institution what its founder intended it to be, an efficient instrument for the "increase and diffusion of knowledge among men." He is succeeded in the post of Secretary of the Smithsonian Institution by Professor Spencer Baird.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Annual General Meeting, May 24, 1878.—Professor ALLMAN, F.R.S., President, in the chair.

The President, in his Anniversary Address, in accordance with the plan he had adopted on previous occasions, selected for exposition a group of organisms—the *Polyzoa*—on which recent investigations had thrown more than usual light, and gave a *resumé* of the principal discoveries by which our present knowledge of the group has been brought about. Commencing with their anatomy and development, and certain important features in their systematic grouping, he pointed out the advance made in our acquaintance with their primary groups by the labours chiefly of Busk and Nitsch. Discussing certain disputed points which recent investigations have tended to clear up, such as the nature of the "Brown Bodies," and the so-called "Colonial Nervous System," he maintained that the evidence of such investigations was mainly in favour of the "Brown Bodies" being merely the residuum of degraded and withered polypides, and that they have no real morphological or physiological importance; and further, with Nitsch, Joliet, and Busk, that the so-called "Colonial Nervous System" was merely an irregular plexus of cellular and protoplasmic cords and filaments derived from the walls of the zoecium, or polypide-cell, and that it has nothing to do with a true nervous system. Joliet has proposed for it the convenient name of "Endosarc," and refers to it the origin of the reproductive elements of the new polypide buds, and of certain minute corpuscles which are found floating free in the liquid which fills the cavity

of the zoëcium,—a view which may be regarded as too exclusive. He (Professor Allman) had, not long since, an opportunity of examining the remarkable organism known as *Cyphonantes*, a singular little free swimming animal found in the open sea. It is of a compressed pyramidal shape, its soft parts being included in a bivalve shell in the manner of certain *Entomostraca*. It has an organization of considerable complexity, being provided with a complete alimentary canal, with accessory glands, and with certain organs of extremely enigmatical import. Schneider attempted to show that *Cyphonantes* was the larva of a polyzoon, and he announced the startling fact that before its transformation into the adult, it becomes totally disorganised, every trace of structure disappearing, and the entire animal becoming reduced to a homogeneous mass of protoplasm; and this, notwithstanding the complex structure of *Cyphonantes*,—more complex, indeed, than the German zoologist had imagined. It is in this homogeneous, structureless mass of protoplasm that the new polypide arises, and the whole becomes then metamorphosed into the form of the adult. Strange as this history may appear, it has been to a certain extent confirmed by the researches of Nitsch and Joliet, and he (the President) felt that, in the face of the evidence afforded by those researches, he would not be justified in still urging the objections which, chiefly on theoretical grounds, he had formerly offered. Finally, his address took up the question of "Individuality," or the relation to the polyzoal colony, and he maintained, in the somewhat modified form resulting from the researches of Nitsch, the view which he had long ago brought forward, and which has since been generally accepted by recent investigators, namely, that the zoëcium or cell in which the polypide is lodged must be regarded as having a zooidal individuality, independently of the polypide, which has also a zooidal individuality of its own, and that the two thus form a compound element which becomes associated with similar ones in order to form the colony. This compound animal is thus composed of two zooidal individuals,—zoëcium and polypide; on the zoëcium devolving the functions of sexual and non-sexual reproduction, and on the polypide that of nutrition.

At the conclusion of his Address, Prof. Allman called attention to some living examples of Tree Frogs (*Hyla arborea*) which he had obtained in the South of Europe. Those now exhibited to the Fellows convincingly showed the remarkable change of colour which this species of Frog is known to possess, some of them being green, others bright blue. This change of hue is due to certain pigment-corpuscles, the precise nature of which Prof. Allman is at present engaged in investigating.

The Report on publications was read by the Secretary, and that on the balance-sheet by Dr. R. C. A. Prior. Afterwards the Treasurer (Dr. J. Gwyn Jeffreys) read his statement of the accounts, &c., of the past financial year, 1877. This showed a highly satisfactory result, a balance of £46 13s.

remaining in hand after payment of all current expenses, while the sum of £700 had been invested since the last Annual Report.

The alterations in the Bye Laws (concerning an increase in the rate for Fellows compounding) proposed by the Council on the 18th of April, having been formally hung up in the Common Meeting Room of the Society, and duly read by the President and by the Vice-President in the chair at the last two General Meetings of the Society, were put to the ballot, and confirmed by the Fellows at large in the terms of the charter.

The senior Secretary then announced the death, during the past year, of fourteen Fellows, including four foreign members. Against this, thirty-eight new Fellows and five foreign members had been elected. Among the deceased were several men of repute in the scientific world. Mr. Henry Adams, well known as a conchologist; Dr. Elias Fries, of Upsala, a large contributor to our knowledge of the Swedish Flora, especially its cryptogamic botany; Mr. Andrew Murray, chiefly credited as an entomologist, but nevertheless well versed in several kindred branches, and particularly known by his work, 'On the Geographical Distribution of Mammals;' Prof. Parlatore, of Florence, an eminent Italian botanist; Mr. H. Fox Talbot, whose name is indelibly connected with photography; Dr. R. Visiani, of Padua, a distinguished botanist; Dr. H. A. Weddell, of Potiers, whose important contributions to the Flora of the Cordilleras and on the *Cinchona* tribe are well known; and Mr. T. Vernon Wollaston, the distinguished author of "*Insecta Maderensia*" and "*Testacea Atlantica*."

The following gentlemen were elected into the Council:—Mr. John Ball, Dr Thomas Boycott, Mr. Frederick DuCane Godman, Dr. Albert Günther, and the Rev. George Henslow, in the room of the subjoined, who retired by rotation—Mr. J. G. Baker, Dr. W. B. Carpenter, Mr. Henry Lee, Prof. W. K. Parker, and Mr. S. J. A. Salter.

The President and officers of the Society were all re-elected.

ZOOLOGICAL SOCIETY OF LONDON.

June 4, 1878.—Prof. FLOWER, F.R.S., V.P., in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of May, 1878, and called special attention to two male Lesser Birds of Paradise (*Paradisea minor*), purchased on the 2nd of May; a Copper-headed Snake (*Cenchrus centortrix*), presented by Dr. F. Painter, F.Z.S., of South Pittsburg, Tennessee, U.S.A., and a Hairy or Andean Tapir (*Tapirus roulini*), obtained by exchange.

Mr. Sclater exhibited a young specimen of Temminck's Manis (*Manis Temmincki*), and read a note describing habits of this animal in captivity by Mr. F. Holmwood, Assistant Political Agent at Zanzibar,

Mr. Slater also called attention to the extraordinary mimicry of the true rectrices by the elongated upper tail-coverts in *Ciconia maguari* and *C. episcopus* as observable in the living examples of these birds in the Society's Gardens.

Mr. Edward R. Alston exhibited, on behalf of Dr. Elliott Coues, two specimens of *Synaptomys Cooperi*. To this species—the type of *Synaptomys*, proposed in 1867 by Professor Baird as a subgenus of *Myodes*, full generic rank had been accorded by Dr. Coues in 1874. The present specimens were, so far as was known, the first typical specimens sent to Europe.

Professor Huxley read a memoir on the Cray-fishes, in which he gave a review of the various generic divisions of this group of Podophthalmous Crustacea, and pointed out how remarkably these divisions corresponded with their geographical distribution.

Professor W. H. Flower exhibited the skull of a two-horned Rhinoceros from Tipperah, and read a note on the peculiarities of its structure.

A communication was read from Messrs. Godman, Salvin and Druce containing a catalogue of the Lepidoptera collected by Mr. S. N. Walter, in the Island of Billiton.

Messrs. Godman and Salvin also read a list of the butterflies collected in Eastern New Guinea and some neighbouring Islands by Dr. Comrie, during the voyage of H.M.S. 'Basilisk.'

Mr. A. G. Butler read a paper containing the description of a new species of the orthopterous genus *Phylloptera* from Madagascar, which he proposed to name *Phylloptera segonoides*.

Messrs. Slater and Salvin read a report on the collection of Birds made during the voyage of H.M.S. 'Challenger.' The present communication, forming the eleventh of the series, contained a description of the Steganopodes and of the Impennes. Of the first group the collection contained thirty-three specimens belonging to eight species; of the second, thirty-seven specimens belonging to six species.

Prof. E. Ray Lankester read a paper in which he gave an account of the structure of the hearts of *Ceratodus*, *Protopterus*, and *Chimæra*, with an account of certain undescribed pocket-valves in the conus arteriosus of *Ceratodus* and of *Protopterus*.

June 18, 1878.—ARTHUR GROTE, Esq., Vice-President, in the chair.

The Secretary read extracts from a letter addressed to him by Mr. E. L. Layard, containing remarks on two species of New Caledonian birds.

A second communication from Mr. Layard stated that there was an example of the recently-described Woolly Cheetah (*Felis lanea*) in the South African Museum at Cape Town.

Mr. Edward R. Alston read a paper "On the Squirrels of the Neotropical Region," in which he recognised twelve out of fifty-nine described species,

and re-described two, *Sciurus rufo-niger*, Pucheran, and *S. pusillus*, Geoffroy, which had been recently overlooked.

Mr. Sclater exhibited and made remarks on a third collection of Birds from Duke of York Island, New Britain and New Ireland, which he had received from the Rev. George Brown. Amongst them was an example of a new Fruit-pigeon proposed to be called *Carpophaga melanochoa*.

A communication was read from Dr. M. Watson, containing a description of the male generative organs of *Chlamyphorus truncatus* and *Dasypus sexcinctus*.

A communication was read from Professor Garrod on certain points in the anatomy of Levaillant's Dart (*Plotus Levaillantii*).

A communication was read from Messrs. Garrod and Turner on the gravid uterus and placenta of *Hyomochus aquaticus*.

A communication was read from Mr. Moore containing the descriptions of new Asiatic butterflies of the family Hesperiidæ.

A second communication from Mr. Moore gave a list of the Lepidopterous Insects collected by the late Robert Swinhoe in the island of Hainan.

A communication was read from the Marquis of Tweeddale, being the tenth of his contributions to the ornithology of the Philippines. The present paper gave an account of the collection made by Mr. A. H. Everett in the island of Bohol. The collection contained representatives of forty-seven species. Although all of these were previously known, seven of them had not been before recorded as being inhabitants of the Philippines.

Dr. O. Finsch read the description of a new species of Starling from Lake Marka-kul, in the Chinese High Altai, which he proposed to name *Sturnus Poltaratzskyi*, after Gen. Poltaratzsky, Governor of Semipalatinsk.

A communication was read from Mr. H. W. Bates containing the description of new species of Coleopterous Insects (*Geodephaga* and *Longicornia*) taken by the late Dr. Stoliczka during the Forsyth Expedition to Kashgar in 1873-74.

A communication was read from Dr. G. Hartlaub in which he gave the description of a new species of *Notauges* (*N. Hildebrandti*) of Cabanis, M., discovered by Mr. Hildebrandt at Ikanga in Ukambá, Eastern Africa.

A communication was read from Lieut.-Col. R. H. Beddome, giving the description of a new Batrachian from Southern India belonging to the family Phryniscidæ, which he proposed to call *Melanobatrachus indicus*.

Sir Victor Brooke, Bart., exhibited and made remarks on a fine head of the male *Gazella Granti*, originally described from sketches made by Capt. Speke during Speke and Grant's Expedition. The present specimen had been shot by Mr. Arkwright about eighty miles from Ugogo, in Eastern Africa.

A communication was read from Professor J. V. Barboza du Bocage, containing a list of the Antelopes observed in Angola.

A communication was read from Mr. Carl Bock, in which he gave the description of two new species of shells from China and Japan.

A communication was read from Mr. Edgar A. Smith, containing the description of five new shells from the island of Formosa and the Persian Gulf, with notes upon some known species.

Messrs. Godman and Salvin read the descriptions of some apparently new species of Butterflies from New Ireland and New Britain, received from the Rev. G. Brown.

Mr. O. Salvin read the twelfth of a series of reports on the collection of birds made during the voyage of H.M.S. 'Challenger.' The present paper contained an account of the Procellariidæ, collected during the Expedition. Eighty specimens had been obtained belonging to twenty-two species.

Mr. Sclater read some supplementary notes on the Curassows now or lately living in the Society's Gardens.

Mr. J. Wood-Mason read a paper on the structure and development of the trachea in the Indian Painted Snipe (*Rhynchæa bengalensis*).

This Meeting closes the present Session. There will be no more Scientific Meetings until the commencement of the next Session in November next.

NOTICES OF NEW BOOKS.

To the Arctic Regions and Back in Six Weeks: being a Summer Tour to Lapland and Norway; with Notes on Sport and Natural History. By Capt. A. W. M. CLARK KENNEDY, F.R.G.S., &c. With Map and numerous Illustrations. 8vo, pp. 422. London: Sampson Low & Co. 1878.

As a review is of no value unless it conveys the candid and impartial opinion of the critic, we may state at once that we are a little disappointed in this volume. The title, albeit a taking one, scarcely expresses the author's meaning; for, strictly speaking, he was not in the Arctic *Regions* at all, but merely travelled, by a well-known route, to a spot within the Arctic Circle, where the midnight sun may be seen. His tour was the ordinary one, by rail and carriage through the southern part of Norway, and by steamer along the coast to Tromsø. Hence, considering the number of books already published about Norway, it is difficult to comprehend the *raison d'être* of the present volume.

In his Preface, the author says :—

“My only excuse for adding another volume to the already long and ever-increasing list of Scandinavian travels, is my belief that comparatively few of our fellow-countrymen, and more especially of our countrywomen, who, year after year, ‘take their pleasure abroad’ by returning each successive summer to the familiar Continent, are aware what a splendid field is open to them by paying a visit to the glorious scenery of Norway, or by pushing still further northward across the Arctic Circle to the wilder land of the Laplanders, and the regions lighted by the rays of the midnight sun.”

The whole of this paragraph appears to us to be founded upon a misapprehension, for fewer countries are better known than Norway ; and after perusing carefully the 422 pages of Capt. Clark Kennedy’s volume we have failed to discover that he has anything new to tell us about it. On the other hand, a good many pages are devoted to matters which have little or no relation to Norway, but appertain strictly to the regions of which he only crossed the threshold. The description, for instance, of the habits of the White Bear (pp. 252—256), and the chase of the Walrus (pp. 257—260), taken from Lamont’s well-known volumes, might well have been omitted, seeing that neither of these animals came under the author’s personal observation, and the long account given of the Eider Duck (pp. 197—206) contains no statement with which ornithologists are not already familiar through the writings of previous authors.

In some cases Capt. Clark Kennedy’s identification of the species of animals mentioned is incorrect ; as, for example, at p. 156, where he gives the Beaked Whale, or “Bottle-head,” the name *Delphinus tursio* (or, as he erroneously spells it, *tersio*), which appertains to the Bottle-nosed Dolphin, the scientific name of the Bottle-head being *Hyperoodon rostratus* (Chemnitz) : nor is it correct to term seals “*Cetaceæ*” (p. 253), nor *Cetacea* “fish” (p. 295).

We must do Capt. Clark Kennedy, however, the justice to say that there are many pages in his work relating to the Natural History of the country visited, which are not only readable but entertaining ; and if there is nothing very new in the facts narrated, the author has at least succeeded in imparting an air of novelty by the pleasant manner in which he has dealt with them.

On the subject of birds, especially, Capt. Kennedy has a good deal to say, and moreover, more accurately. Indeed, we should be surprised if this were not the case, for we do not forget his acceptable contribution to the Ornithology of Berks and Bucks, which was favourably noticed in the pages of this journal ten years since, and which brought so much credit to the author, then an "Eton boy" of sixteen.

To give the reader some idea of the author's style, we may quote a few paragraphs from the book before us:—

"The height to which wood grows in Norway is certainly great compared with Scotland, as the following particulars will show. The Scotch fir grows on the mountains of Norway to the great height of 2870 feet above the level of the sea, whilst the common birch exists to the altitude of 3300 feet, and the juniper and many smaller shrubs flourish at even a greater height, where grow also quantities of beautiful flowers and mosses. Oak and beech is very seldom seen in Norway; but the poplar, willows of various kinds, and the beautiful mountain ash are met with almost everywhere, excepting in the extreme north, where the only woods of any extent are of Scotch fir." (P. 86.)

"For the botanist, I can imagine no more charming quarters than Kongsvald at which to stay, while he searches the Dovre-fjeld for specimens of flowers. Some of the rarest wild flowers in Norway are to be found in the neighbouring mountains, and weeks might be pleasantly and profitably spent in examining the plant-life of this wild region. It is stated that one of the first Norwegian botanists, the late Professor Blyth, discovered in his rambles over the Dovre-fjeld no less than 440 plants and ferns, 200 mosses, 150 lichens, and some 50 species of *Alga*, which list ought to be a sufficient attraction to the botanist to linger here awhile." (P. 122.)

Off the Loffoden Isles on June 26th :—

"Eider-ducks in vast numbers were to be observed on all sides, and flocks of little ducks and gulls just out of the shell were following their parents among the tumbling waves. Skua gulls were there, too, in considerable abundance, and robbers as they are, these birds made a capital thing of it as they pursued the other species of gulls after their successful fishing, and, dashing at them with loud cries, caused them to disgorge whatever they had caught at once, which the Skua picked up before it even reached the water. Large shoals of mackerel were sporting on our starboard-bow; and the fat bodies of their pursuing enemies, the porpoises, were now and then seen rolling over and over in the surf. More than one

Sea Eagle (*Haliæetus albicilla*) was soaring far up in the dusky sky, and Golden-eyed Ducks, Great Northern Divers, Terns, Mergansers, Guillemots, Cormorants, Razorbills, and hosts of other species too numerous to name, made the sea and air dark with their ever-moving forms. Such an ornithological treat is not often to be obtained, and we stood on deck for a long time watching, with the greatest interest, the varied forms of life around the ship, which often had to be put at reduced speed in the narrow fjords to give the birds time to hurry their young broods out of danger of being run down. As we progressed northward, the vast flocks of Eider-Ducks seemed ever to increase, and so great were the crowds of the female birds upon some of the numerous islets, that their brown forms perfectly covered the rocks, and they themselves were hardly distinguishable from the tangled masses of dark sea-weed."

A useful portion of Capt. Kennedy's book is the Appendix, containing particulars of his expenditure on his tour, which occupied six weeks. During this time he estimates that he travelled as nearly as possible five thousand English miles. These details will be useful to future travellers who may make the same tour, as will also the route-map which is given at the end of the volume. Some of the illustrations are prettily designed, the Long-tailed Ducks (p. 114), and the "Seals at home" (p. 168) being especially characteristic and natural in outline.

Camp Life and Sport in South Africa. By T. J. LUCAS, late Captain Cape Mounted Rifles. 8vo, pp. 258, with coloured Illustrations. London: Chapman and Hall. 1878.

It might reasonably be doubted, on taking up this volume, whether anything remained to be said on the subject of South Africa, after all that has already been published on this fertile theme. It is not very long since Mr. Anthony Trollope presented us with two thick volumes of South African experiences; and his well-known thoroughness might be thought to have exhausted all the ordinary topics of interest in that direction. Captain Lucas's view of the country, however, has been taken from a different stand-point. Unlike Mr. Trollope, whose sojourn there was comparatively short, and who, like many another visitor, wrote merely from first impressions, Captain Lucas's residence of nearly fifteen years has enabled him to form a more mature and probably

a more reliable estimate on many points than is likely to be the case with a casual observer. Moreover, the subjects upon which Captain Lucas has most to say are just those upon which a temporary visitor would be likely to know least. Called by the exigencies of his military duties many hundred miles from civilization, he has met with opportunities of enlarging his experience of camp life and the chase of wild animals, which fully justify the appearance of the present volume.

Wisely omitting all description of the outward voyage, with which every one is so familiar, and saying as little as possible on the appearance of Cape Town, which has already been described by numerous writers, he takes the reader at once to his colonial quarters and initiates them into all that he thinks most likely to interest a new-comer, from a military and sporting point of view.

It scarcely falls within our province to criticise the various statistics, however interesting, which are given of the civil and military life, and the account which is furnished of the mode in which Kaffir warfare is conducted. We shall confine attention to such portions of Captain Lucas's narrative as relate more particularly to Natural History.

It is scarcely to be expected that the author could pass Ascension Island without noticing the Turtles and the wonderful colony of Terns which is annually to be found there in the nesting season. So badly is the Island supplied, that the garrison, he tells us, is mainly dependent for its subsistence upon these two sources of provision.

It was not until the author found himself on outpost duty, that he was in a position to observe or make notes on the strange and interesting animal life by which he was surrounded. At Fort Brown, near the banks of the Great Fish River, he employed his leisure hours in learning to preserve and set up birds, of which he found many beautiful species. Conspicuous amongst them were the little Crested Kingfisher, a perfect gem of colour, several species of Sugar-bird (*Nectarinea*), which were constantly to be seen flying over the Aloe-blossoms, the Orange-throated Lark, the Blue Jay, and the Kaffir Finch, whose black and white plumage and red throat were set off by his long streaming tail, the feathers of which are so prolonged that they droop into a perfect arch, and when flying nearly overbalance him.

The sandy plain on which the Fort was situated was covered

with stunted karoo bush, and full of Duyker Gries-buck and Bush-buck. Two kinds of hares frequented the plains; the larger kind grey, furred like our rabbit, and a small red mountain species. On the plains were found enormous land tortoises, and many strange *feræ naturæ*. Not the least singular of these were the Spring-hare, or "Spring-hasen" of the colonists, a singular little animal of the Jerboa species, about the size of an ordinary hare, which burrows in the sand, and only emerges at night to feed, and which when wounded emits a most peculiar scream, like a penny trumpet.

The author's "Cape Pheasant" is, of course, a Francolin. He describes it as much given to running in the thick scrub, whence it is difficult to drive it, and it never rises on the wing unless compelled, when it mounts like a pheasant, and presents an easy mark to the sportsman.

In the category of strange creatures to be found in this district Capt. Lucas includes the Ant-bear, or "Aard-vark," which not only inhabits the frontier, but is spread over all parts of the interior, the surface of the ground for miles being completely honeycombed with the excavations made by the claws of this indefatigable burrower in search of the daily ant-food on which he subsists. His soft muzzle and innocent calf-like head, with its mild bluish eyes, seem almost disproportionate, set upon his bulky shapeless frame, sparsely covered with scanty bristles. His porcine body, again, is at variance with his formidable claws and broad muscular fore-arms, which enable him to dig with ease his circular shaft, some two feet in diameter, in the hardest ground, descending vertically to a depth of three or four feet before it takes its lateral direction. These holes present a formidable obstruction to the hunter, when riding after larger game, and he is frequently rolled over in full career by the sudden subsidence of his horse's fore-legs in one of these dangerous pitfalls. Capt. Lucas had several opportunities of observing the habits of this singular animal. He says:—

"It leaves its shelter only at night, and is extremely shy and sensitive to discovery, making its earth close to the large ant-heaps, so numerous distributed over the Veldt. Here it scrapes a shallow trench in the upper surface, which has the effect of bringing out the Ants in great numbers; then lying extended at full length, resting on its fore-paws, it launches out its prehensile tongue into the cavity, waiting patiently until it is completely

covered with insects before it withdraws it, which manœuvre it repeats until it is satisfied.* The Ant-bear is sometimes surprised in the open in the day-time by the Boers, who hunt it with dogs, in which case, though unprovided with teeth, it defends itself most effectually by striking out with its strong fore-arms, and tumbles its assailants over right and left, often ripping them up with its dangerous claws. When run to earth, the Boers try to dig it out; but this is no easy matter, for it can make its way underground often more rapidly than they can follow it. They have a way, however, of stopping its progress by stamping, or striking heavily with a pole on the ground over its head, and this confuses it, probably from its uncertainty as to the direction from which danger may be expected. The flesh is considered fit for table, and, according to the Boers, eats like excellent pork, the crackling being esteemed especially delicious. The Hottentots are particularly fond of it."

Speaking of the mode of hunting amongst the Kaffirs, the author states that—

"When game is scarce they hunt in large parties, and surround a considerable tract of country; the game, consisting of antelopes of various kinds, interspersed with hares and partridges, is driven by the gradually contracting circle towards the centre, where it is eventually despatched with 'knob-kerries' and assegais, the former a long knobbed stick of heavy wood, which they throw with great dexterity, being able to knock down a partridge on the wing at thirty yards."

The Zulus hunt in the same way. Immediately around Pietermaritzberg, game is comparatively scarce, consisting principally of the small Ipite-bok, a graceful little antelope, hyænas, wild pig, and leopards; but as the sportsman advances further towards the Drachenberg, and Umzumkulu, he meets with rhinoceros, hippopotamus, lions, and giraffes.

The author's account of Ostrich-farming at the Cape, a topic which he could scarcely have passed over, is neither so full nor so accurate as might have been expected. When writing this chapter, he was evidently unaware how fully the subject had been dealt with in a work entitled 'Ostriches and Ostrich Farming,' published a year ago by Messrs. Trübner & Co.

A singular account is given (p. 221) of the effect upon antelopes and other wild animals of a shower of "sleety snow," which fell continuously for three days. So fatal did this prove to the animals

* A coloured lithograph is given of the animal, in the characteristic position here described.

inhabiting the plains, that the author actually saw Wildebeests and other antelopes making their way blindly into the middle of the town (Bloem Fontaine) in search of shelter, where they were easily captured. "After the storm ceased they were found dying in all directions, and the plains were covered with their carcasses. In the course of an afternoon's ride, he counted as many as seventy dead antelopes of various species, and was informed that Ostriches also were found amongst the slain. A knowing settler turned the circumstance to good account by stripping off the hides as they lay, and sending them in bales to Cape Town for sale."

Want of space precludes our quoting further from Capt. Lucas's readable book. What he has given us, if not very new, is at all events pleasantly written, and he has wisely avoided the too-common practice of spinning out his material. So agreeably does he detail his experiences that the reader, on reaching the last page, must almost regret that the author has not more to say.

The White Whale. By HENRY LEE, F.L.S., F.Z.S., &c. 8vo, pp. 16. London: Burt & Co. 1878.

It was only to be expected that the hundreds who had flocked of late to the Westminster Aquarium, to see the live whale there exhibited, would be glad to be furnished with some account of this remarkable animal; and Mr. Henry Lee's pamphlet, which has just appeared under the above heading, will supply a want which must have been generally experienced. We have heard much disappointment expressed at the size of the Westminster captive, many having expected, it seems, to have found on their arrival at the Aquarium nothing smaller than a Greenland Whale of at least fifty or sixty feet in length. To such persons we may recommend the perusal of Mr. Lee's *brochure*, with the expression of a hope that the extremely interesting history which attaches to the Beluga or White Whale may in some degree compensate for their disappointment.

The "Beluga," *Delphinapterus leucas* (Pallas), or as Mr. Lee terms it *Beluga catodon*, can scarcely be said to belong to the British fauna, only three instances being on record of its appearance on our coasts. Information gathered from trustworthy sources leads to the belief that the annual migrations of the Beluga are so

different from—in fact, so contrary to—those of almost all other whales, that further knowledge of its nomadic, but doubtless systematic roamings would be very interesting.

“It is remarkable,” says Mr. Lee, “that whilst other roving whales, like the migratory birds, seek a warmer temperature in lower latitudes on the approach of frost, the Beluga, on the contrary, prefers to pass the coldest season amidst the ice and gloom of the Arctic Seas, and the hottest months of the year in comparatively warm water and under sunny skies. It thus exhibits greater capability of enduring a considerable range of temperature than any other whale.”

The skin of the Beluga is not invariably creamy white, like that of the specimens brought to England. Capt. Scoresby describes some which he saw as having been of a yellow colour approaching to orange, and others as tinged with a rosy hue. The young are bluish grey, sometimes mottled with brown spots. Like the Common Porpoise, it is far from being a timid animal, when not hunted and persecuted. “Schools” will often accompany a ship and gambol round it for days. The whalers, however, seldom interfere with them. It is difficult to strike them on account of their great activity, and if the skin is pierced it is so tender that the barbs generally draw out. Moreover, when the animal is secured, the blubber is not of sufficient value to pay the crew for their time, labour, and personal risk.

The size to which this species attains has been much exaggerated. Lacépède gives it a length of from twenty to twenty-three feet, but it probably or never exceeds sixteen feet. Mr. Lee states that the longest skeleton he knows of—that in the British Museum—measures only fifteen feet. The condition of the epiphyses of the bones in a skeleton of this whale twelve feet six inches long, in the Museum of the Royal College of Surgeons, shows that ossification was nearly complete, and therefore that the animal had all but reached its full growth.

Mr. Lee has been at some pains to trace the history, so far as known, of this singular animal, and has brought together some curious particulars concerning it. Amongst other things he states that it is erroneous to suppose that the conveyance of live Cetacea for long distances dates merely from the recent exhibition of specimens in this country and in America. Many persons, probably, will be surprised to learn that in olden times it was not only

occasionally accomplished, but that dolphins were thus regularly sent to market.

We will not further anticipate Mr. Lee, however, by quoting from his interesting pamphlet, but will recommend our readers to peruse it in its entirety. The account which he gives of the mode of capture, transit and manner of feeding the White Whales which have been brought to this country, will prove as entertaining as it will be new to many.

Rules for Zoological Nomenclature. Drawn up by the late H. E. STRICKLAND, M.A., F.R.S. New Edition, by P. L. SCLATER, Ph.D., F.R.S. 8vo, pp. 27. London: John Murray 1878.

THE Rules originally prepared by Mr. Strickland were first printed in the Report of the British Association for 1842, when a certain number of separate copies were struck off and distributed. In 1863 they were reprinted by Sir William Jardine, under the authority and at the expense of the Association, and they again appeared in the Report of the Association for 1865. But as the separate copies of these various editions have been exhausted, and as there was little chance of obtaining one without purchasing the entire volume of Reports in which they originally appeared, it has been thought desirable by the General Committee of the Association, in view of the great importance of the Rules to zoological science and their general usage by naturalists, to reprint and publish them at the cost of the Association, in such a form as to be, in future, easily accessible.

The superintendence of this new issue has been entrusted to Mr. Sclater, who has "thought it best to adhere closely to the original text of 1842, adding to it the Report of 1865, in which the proposed alterations are given, the text of 1865 never having been properly revised so as to make it accord with the proposed alterations."

We feel assured that the appearance of this new edition of the 'Rules for Zoological Nomenclature' will be welcomed by naturalists, and we cordially recommend it to the notice of our readers.

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A VISIT TO THE EXISTING HERDS OF BRITISH WHITE WILD CATTLE.

BY ALFRED HENEAGE COCKS, F.Z.S.

[*Preliminary Remarks.* — A considerable degree of interest attaches to the few remaining herds of wild white cattle which are still preserved in Great Britain, since these animals, according to the high authority of Professor Rütemeyer, are less altered from the true *Bos primigenius* type than any other existing breed of cattle, although they do not equal in size their wild progenitors. Fossil remains of *Bos primigenius*, the *Urus* of Cæsar, and also of *Bos longifrons*, a very distinct species of smaller size, both of which were domesticated in Britain, are found in the more recent tertiary deposits over the greater part of Europe, including the British Islands.

Bos longifrons, a small fine-legged, short-horned animal, is called by Prof. Boyd Dawkins the Celtic Short-horn, because it was the only domestic ox of the Celts. It was certainly domesticated, however, before the Celtic invasion, and the term "long-faced ox" is perhaps preferable. It was the only ox in Britain in the time of the Romans, and afforded sustenance to their legions. From it the small dark breeds of Wales and Scotland are descended; and it survived until recently in Cornwall, Cumberland and Westmoreland.* The remains of *Bos longifrons* are plentiful in the English fens, and seem to have afforded a staple article of food in the neolithic period. Mr. Sydney Skertchly has found immense

* Skertchly, 'Fenland, Past and Present,' p. 343.

numbers of the bones of this animal in what are probably the remains of a Stone Age lake-dwelling at Crowland. At the great flint implement manufactory at Grimes Graves, near Brandon, the remains of this animal are very plentiful, and belong chiefly to very young calves. It would appear from this that a principal element in the food of these people was milk, and therefore they could not afford to keep the calves, which must have consumed a large portion of what would otherwise have been available for the use of the household.*

Bos primigenius, the gigantic ox called *Urus* by Cæsar, was a grand animal, readily distinguished from the other species by its massive build and larger bones. The fossil remains of the wild animal are found in British palæolithic deposits, but not in neolithic.† It was, however, domesticated during the late neolithic age in Switzerland and Italy, and co-existed with the smaller *Bos longifrons*. It was re-introduced into England about A. D. 449, and eventually took the place of the smaller species, except in those parts of the country which, from their mountainous character, afforded shelter to the oppressed Britons.‡ The *Urus* seems to have become wild in Britain, and from this species the few herds of wild white cattle which still live in a semi-wild state are descended. Gilpin says, "We cannot positively fix the time when these creatures ceased to exist in this island in a state of freedom; but we can at least say that they did so exist within three hundred years."§ Herds of this breed are recorded to have existed in a semi-wild state at Kincardine, Stirling, Cumbernauld (Dumbartonshire), Cadzow (Lanarkshire), Drumlanrig (Dumfriesshire), Chillingham (Northumberland), Bishop Auckland (Durham), Burton Constable and Gisburne (Yorkshire), Lyme (Cheshire), Chartley (Staffordshire), and Wollaton (Nottingham). Those at Burton Constable were all destroyed by a distemper.|| When Bewick published his 'History of Quadrupeds,' at the close of the last century, he was enabled to show that only *five* herds then existed, namely, those at Chillingham, Wollaton, Gisburne-in-Craven, Lyme,

* Greenwell, "Grimes Graves," Journ. Eth. Soc., vol. ii., p. 431 (1871).

† A magnificent articulated skeleton of *Bos primigenius*, found in Burwell Fen, is preserved in the Zoological Museum at Cambridge, where may also be seen the greater portion of a skull of another specimen, in which a stone celt was found and still remains imbedded.

‡ Skertchly, 'Fenland, Past and Present,' p. 344.

§ 'Forest Scenery,' Lauder's edition, 1834, vol. ii., p. 281.

|| Id., p. 283.

and Chartley.* Since that date the herds at Wollaton and Gisburne have died out, and the breed having been introduced (subsequently, it is presumed, to Bewick's notice) or re-introduced at Cadzow (Hamilton), in Lanarkshire, the ancient seat of the Dukes of Hamilton, there now survive at the present time *four* herds only, of which the following account is given from recent inspection by Mr. A. H. Cocks. Of these the Chillingham breed, belonging to the Earl of Tankerville, are said to be the purest. They are characterised especially by the form of their horns, which may be described as curving first backward and upward, and then sweeping forward and downward, while the points turn upward. In the skull the forehead is flat or slightly concave, and the occipital ridge between the horns is straight and level. In form these cattle are beautifully shaped, with small heads, straight backs, and short legs. Their colour is white, except the ears and muzzle, which are either red or black, according to the breed. The horns are white, with black tips.†

In October, 1872, at the invitation of the Earl of Tankerville, H.R.H. the Prince of Wales paid a visit to Chillingham. During this visit an inspection of the wild cattle was made, and the finest bull in the herd was ridden out and shot with a rifle by his Royal Highness. The head of this animal was preserved entire. A figure of it, with a description, and some account of the herd by Mr. Tegetmeier, appeared in 'The Field' of November 30th, 1872. At that date there was said to be 1500 acres of wood in the park, and the herd numbered between sixty and seventy head.‡ The late Edward Blyth, one of the ablest of modern zoologists, saw this head after it had been preserved, and thus wrote of it:—"I was surprised at its small size, and also at its identity in every essential particular with the Highland 'Runt,' which I was not prepared to expect from the published descriptions. That it is a form of typical or unimproved *Bos taurus*, unmodified by the modern

* Bewick, 'General History of Quadrupeds,' 3rd ed., 1792, p. 35.

† Bell, 'British Quadrupeds,' 2nd ed., p. 372.

‡ Perhaps the best account which has been given of the Chillingham cattle is that published in vol. ii. of the 'Annals of Natural History,' by Mr. J. Hindmarsh, who derived much of his information from the Earl of Tankerville himself. Those who wish to pursue the subject further may consult 'The Agricultural Survey of Northumberland,' 3rd ed., p. 141; 'Proc. Brit. Assoc. at Newcastle-on-Tyne,' 1838; Youatt's 'Complete Grazier,' 11th ed., 1864, pp. 2, 3; and Darwin's 'Animals and Plants under Domestication;' in addition to the works already quoted.

cattle-breeder's skill, seems to me to constitute its chief claim to the attention of zoologists. Artists should bear this in mind when representing it. That it has any peculiar claim to be descended from *Bos primigenius* I fail to perceive, and should rather point to domesticated *Bos longifrons* as its immediate ancestor. *Bos primigenius* bears in its turn the same relationship to the older (but still post-tertiary) *Bos giganteus*, which the contemporary and still existent *Bison europæus* bears to the older *Bos priscus*." This view, it will be seen, differs somewhat from that of Prof. Rütemeyer, whose opinion, if we mistake not, was based on a skull or skulls of the Chillingham breed presented to him by the Earl of Tankerville.—ED.]

Chartley.—On June 29th, 1877, we walked up to the cattle in Chartley Park, Staffordshire (the seat of Earl Ferrers), and after they had once or twice moved away from us a short distance, keeping in single file, they allowed us to come up within ten or twelve yards of them without showing the slightest further symptom of shyness. There were sixteen animals together, and one sickly cow which kept by herself a few yards from the herd, making a total, inclusive of a bull, cow and young calf we had previously seen in the distance in another part of the park, of twenty head. They stand about as high as the Jersey breed, the bulls looking almost bison-like in shape, with very thick, solid fore-quarters, and very light and "tucked up" about the back ribs. The udder of the cows is very small, inclining forwards, reminding one of a sheep's.* The teats are black or blackish. The black on the nose extends a little (about an inch) beyond the naked part; some have a very little on the lower lip. Several have their fore-legs half way up to the knee lightly dotted with small black spots. The whole of the inside of their ears and about half of the outside, coal-black. The proportion of black on the outside varies a little. Young calves are of a bright white, older animals rather duller, while the old bulls, bullock, &c., are dirty white, or cream-colour; but this latter is perhaps the colour of their skin, showing through their extremely thin coats. The herd is made up somewhat as follows:—One nine-

* This is also the case with the cows of the European Bison.—ED.

year-old bull; one five-year-old bull; one bullock; five or six young bulls of different ages; two young bull-calves (one called two months old, the other two or three weeks, at the date of my visit); the remaining nine or ten being cows and heifers of various ages. They breed at any time of the year, but more calves are said to be born during the spring than at other times. Black calves appear to be of frequent occurrence, but they are always killed. Two such were born last winter (probably about the end of January). My conductor, Abel (an old man who had been there all his life), told me that when a calf other than white is dropped it is invariably entirely black, and never either piebald or of any other colour than black. The cattle are extremely quiet, and Abel did not seem to remember any instance to the contrary, except naturally when one had been caught up, &c. They feed them in a pen in the winter, giving them the best hay; the young ones are taken up before the older animals. Abel said there was a sort of legend that the herd could not be got up beyond twenty-one head, so the present Earl's father set to work to try the experiment, and succeeded in getting the number up to forty, thereby proving the legend to be "all a tale." The park is 1000 acres, and contains, besides the cattle, red and fallow deer, and about forty horses are turned out into it. I went up to the Hall to look at what heads there might be stuffed. Measurements of heads of all the four herds will be found together at the end. With respect to the mane that wild bulls were formerly credited with, the idea perhaps arose from the necks of the old bulls being of a darker shade of dirty white or cream-colour, than their bodies, and a very few longer hairs appearing on their crest and dewlap. The direction of the horns of this herd is peculiar; those of the full-grown bulls go rather out and very much down, and then turn upwards and outwards. The cows' horns go nearly straight outwards on each side, and also bend somewhat downwards at their base. Some time ago they exchanged a yearling bull with Lyme, but the one received in exchange was so different looking that they would not breed from him, and finally killed him. Two years ago they bred a female calf between a wild bull and common cow (I do not know her colour). The heifer is said to be almost exactly like the wild cattle. I only obtained a distant view of her: it struck me that she was of a brighter white than ordinary white cattle.

Lyme.—The herd at Lyme Park, Cheshire (the seat of W. J.

Legh, Esq.), was, on June 30th, 1877, at an alarmingly low ebb. It consists of the following individuals:—One old bull, eleven or twelve years old, which was expected to die all through the previous winter: he is now kept in a field just above the garden, where I found him lying down in a shed. The naked part only of his nose is black; his ears also are black, but not as decidedly so as the Chartley beasts. One bull about five years old—the individual above mentioned as brought from Chartley as a yearling. He looked scarcely so heavy in front as the two old bulls at Chartley, but another year or two may perhaps alter this. One cow, about ten years old, very little heavier in front, or lighter behind, than an ordinary cow; nose flesh-coloured, slightly smutted with black. Ears, so far as I could see, black about one-third of their length outside, and dull reddish, or nearly black, inside. The horns come right round, downwards and inwards, the tips almost pointing to each other. This cow is said to be very bad tempered, and I was especially cautioned by the old man who has charge of them against her, so I did not go nearer to her than seventy or eighty yards, at which distance she did nothing worse than look excited, tossing her head and flourishing her tail. A boy whom I saw afterwards down at the farm told me that when another cow died, a few years since, this old cow would allow no one to come near the body for three days; a man dressed up in woman's clothes, but to no purpose. The cow that died was one of the progeny of the old one. One black cow, rising three years—the first calf by the Chartley bull out of the old cow. This, I was assured, is the first known instance of a coloured calf being born here, and is perhaps the only coloured example which has been allowed to live in any of the herds. The first time I went to look at these cattle I passed her over, supposing her to be a tame cow turned out with them, the only thing I noticed about her being the way she threw up her head as I approached,—but I thought this was a habit she might soon have acquired in such company,—and also her fine-bred looking legs. On learning that she was a genuine wild one I returned to their run, and took more particular notice of her. She has an irregular white blaze on the forehead, a narrow line of white along the backbone, beginning a few inches in front of the withers; top of head (occiput) white; a few white hairs on crest of neck; tail white; brisket and belly white, the black coming

down rather lower behind the fore-legs; narrow bands of white round legs just above the knees and by, or rather below, the hocks. She has a fine glossy, smooth coat. Horns much the same shape, and put on at the same angle, as the horn-cores of *Bos primigenius*, with black tips. Nose black; udder white. The end of her tail just reaches the ground. Two heifers, not quite full grown—one out of each of the existing cows; both, I believe, by the Chartley bull. One of them—I imagine the black cow's calf—has the nose black and a little black on fore-fetlocks, and black ears. The other has flesh-coloured nose with black smutting, and rusty black or reddish inside of ears. These five last-mentioned are on the moor, which is said to be about seven miles in circumference. I found them feeding near the lower edge, where the grass was very rough, with rushes. At the farm they have a yearling heifer by the Chartley bull out of a common cow, which was, according to the farm-boy, a roan. The heifer is exactly like the wild breed—black nose and ears, &c.—except that the proportionate size of her fore and hind quarters seem more equalized, as in a tame animal. Also a very small heifer, about the same age as the last, or even possibly older, given by Mr. D. Assheton Smith, who I understand has a herd of white cattle in his park (Bala, North Wales), and one man believed that he had procured them from Scotland.* This heifer has a dull, almost lead-coloured nose, and long rough coat, with pink insides to the ears—an ugly, stunted-looking little thing. These two are both, I fear, going to be added to the herd,—and are, indeed, reckoned with it now, as I was told it consisted of eight head,—which seems a very great pity. A garden man told me that about thirty years ago the herd numbered as many as thirty-four.

Chillingham.—Visitors to Chillingham Castle, Northumberland (the seat of the Earl of Tankerville), are requested not to go into the park unless with the park-keeper, and as the cattle are shy here (far more so than even the red deer), the park-keeper, Mickie, only takes one so as to get a distant view, in order not to frighten them; for, as he says, they can take plenty of exercise for themselves, without being made to gallop for every visitor that comes to see them. Hence, although I had excellent distant views on July 4th and 5th, I was unable to inspect this herd closely. The

* If so, can they be from one of the four herds, now extinct, mentioned in Bell's 'British Quadrupeds,' 2nd edit., p. 370, as having formerly existed in Scotland?

park covers the side of a hill, rising to about 800 feet above the Castle, and faces nearly due north.* Entering at the lower side, we very soon saw, at some distance off above us, fifteen beasts—cows, yearlings and calves—just below a big wood, into which they all gradually disappeared. After about half an hour, several—at first about five, then two or three, and a single one or two—came down at a good pace out of the wood, downhill and towards our left, and disappeared again into another wood on that side. After again waiting for some time without seeing anything more of the cattle, we came away, as Mickie wanted to get back in time to take charge of a party he was expecting. I afterwards went, with this party, up the road on the west side of the park to about two hundred feet from the top of the hill. When we entered the park, and going some little way further onwards and upwards, we presently heard the herd, or at least the bulls, below us, bellowing—a peculiar sound, almost a cry, very different, I fancied, from the lowing of domestic cattle. On getting out at the end of the wood in which we were, we saw the whole herd, consisting of fifty-nine head, over the tops of the next belt of wood, in the low ground below us; and a fine sight it was, the herd for the most part standing still, a bull occasionally bellowing and moving a few steps, two young bulls now and then indulging in a little butting-match, then one—perhaps a heifer—would “frisk,” something like a horse shying, and go curvetting away sideways for a few yards, then suddenly stand still, except that its tail slowly swung from side to side. Some of the party had very soon seen enough and wanted to return, so we were all obliged to go. The view up there was magnificent, all the background to the north being the Cheviots, except a large gap through which we could see into Scotland,† the sea on the east, and a fine panorama of hills on the west. Having seen the party off the premises, Mickie took me to see the hybrid calves, at the farm, by a wild bull out of short-horn cows. They consist of a heifer born June 10th last (the cow’s first calf) and a bull born June 17th. The latter’s ears are rather bright red inside and nearly half their length externally, the two colours in no way blending, but meeting abruptly; nose red, smutted with black, and

* It is said to contain 1500 acres of wood. Cattle have existed here in a semi-wild state for many generations. The park itself is mentioned in records extending back to 1220.—ED.

† The old forest formerly extended between Chillingham and Hamilton, where a similar herd of cattle, with brown ears, still exists.—ED.

the colour extending over the hair beyond the naked patch for about one-third of an inch. The heifer-calf's nose red, but only the naked part; ears pale red (more like the wild type), with some long rough hairs inside. The next morning I again went with Mickie and a party, and entering the park at the lower end, as I had done the previous morning, we very soon saw about forty-seven of the herd, up, on the pasture at the lower part of the hill. They were feeding, and about half of the animals would have their heads down at the same time. The bulls, as before at Chartley, put me in mind of pictures of the European bison, being very "humpy" at the withers and deep in the dewlap, which Mickie said reaches below the knee, and all the neck is pinkish brown,—or pinkish drab more nearly expresses it,—giving quite the appearance at a distance of a short mane. I believe this is mainly due, as at Chartley, to the colour of the skin. Rain coming on, we took refuge in the old "peel" at Hebburn. Afterwards we ascended the hill, leaving the road, and keeping more to the right than we had done yesterday, up to the Roman (? British) camp, which is circular, somewhere about fifty yards in diameter, and surrounded by a single bank about two feet high at the lower side, and about four feet at the upper or south side. It appears to have had only two entrances, one to the north, the other south-west. From here we again obtained distant views of the cattle as they passed slowly between two woods, feeding as they went. The noses of this herd are black, but the black does not—in general, at any rate—extend beyond the naked part. The insides of the ears, with a small portion of the outsides, are pale red.* The whole herd, with the exception of a few of the youngest calves, were suffering from the "rush" from the new grass. Mickie gave me the following particulars:—The herd at the time of my visit (July) numbered fifty-nine, made up of sixteen bulls, sixteen steers,† twenty-seven cows, heifers, &c.,

* Bewick says, "About twenty years since (1792) there were a few at Chillingham with *black* ears, but they were purposely destroyed, since which period there has not been one with black ears." The ears and noses of those at Wollaton were *black*. Those at Gisburne had the inside of the ears *brown*. The animals in the latter herd were *without horns*, very strong-boned, but not high (Bewick). They are said to have been originally brought from Whalley Abbey, upon its dissolution in Henry VIII.'s reign.—ED.

† I adopt the words in use at each place. They all mean animals operated upon at two years old or so, when they are big enough to show what sort of animals they would turn out.

including one "free martin," which here simply means a barren cow, and not one born at the same time as a bull-calf, for two at a birth is unknown in the wild herd. In Cole's time the herd numbered over one hundred and twenty, and in October, 1872, the herd was said to contain between sixty and seventy head.* Some of the ground has since been shut off, their run being now about 1100 acres, though they never go within two hundred feet or more of the top of the hill. Two years ago they numbered seventy, but a bad winter (? 1875-6) reduced them. An old cow had died a few days before my visit, from having been strained in a bog when weak after calving in the bad weather, and having been hurt by another beast's horn. The two youngest calves were about five weeks old. Mickie has been at Chillingham twenty-five years, the last nineteen of which he has been park-keeper, and he declares he has never known a calf born coloured.† The cattle feed much at night. One bull whom they had tried with oil-cake when in the hovel had eaten it readily; they do not appear to care for turnip, as they never eat what is put in the hovel in winter for the deer. Mickie has known as many as fourteen calves born in a twelvemonth, and as few as eight. This must, of course, depend on the number of adult cows in the herd at the time; but these numbers would, I think (allowing for deaths among the calves, of which he says there are not many), give a calf every twelvemonth to every fertile cow above two years old. None of the cattle here have any black on the fetlocks.

Hamilton.—No orders to visit the High Parks at Hamilton, Lanarkshire, the seat of the Duke of Hamilton,‡ were given during the summer of 1877, on account of the game, but on my promise of good behaviour the Duke's Factor kindly gave me one for July 10th. Half a mile, or rather more, from the park-gate brings one to the "old oaks of Caledon," which are, I regret to say, rather on their last legs, and there are no young trees to take their places. Keeping along the road, I presently found, nearly in the corner of their run, some of the cattle, which turned out to be the herd of bulls and stots, numbering eighteen, which are kept

* See 'The Field,' 30th November, 1872, p. 529.

† "Within a period of thirty-three years about a dozen calves were born with brown and blue spots on the cheek and necks." Darwin's 'Animals and Plants under Domestication.'—ED.

‡ It is presumed that this is the same park which in some of the older records of wild white cattle is called Cadzow.—ED.

apart from the cows and young calves. By this plan the cows avoid being constantly worried by the bulls, and it insures the calves being born at a suitable season of the year. The stots are inclined to be leggy, while the bulls appeared to be more like shorthorns than in either of the other herds. Keeping along the road one comes to the cows' inclosure, separated by a space of fifty yards or so from the other. Some little way further on, the cows, numbering twenty-five, gradually made their appearance from behind some ground on the right, feeding down wind, as the bulls had done, in consequence no doubt of the gale of wind which was blowing, with driving rain. Presently, as I shifted my position a little, three or four of the cows saw me, and stood still looking at me. One or two of them lowed, and in a few seconds, from behind the rising ground whence the cows had appeared there galloped down thirteen calves, single file, and for the most part close together, and joined the cows, making the grand total here fifty-six. The calves were born during May and June. So far as I could make out with the glass, the outsides of the ears of several of the cows are white; in the majority of the herd the whole muzzle (the hair round the naked part of the nose, and the under jaw to correspond) is black. This dissimilarity was accounted for by the fact that the herd having got rather low, they had lately been keeping every calf to get up the numbers again. All the stots were rather defective in their "points." Some, perhaps all, of the herd are splashed with black about the fetlocks. The cattle-keeper's wife told me that there were three black calves born this year, "without a white hair about them."* The old lady also said that she had "heard tell of coloured ones and spotted ones, just like a common cow;" and that "there are mostly about three black ones born every year," which very soon find their way to the butcher's. The wild cows, here especially, appeared to have a greater development of muscle on the crest of the neck, just in front of the withers, than any tame cows I have noticed. Some years ago some (bulls, I believe) were polled, but now they all have horns, which first go out sideways, and then up, the tips coming slightly inwards, and not having the length or peculiar turn backwards of the Chillingham cattle. They all appear to be somewhat broken-haired, as at Chil-

* The cattle-keeper, whom I saw afterwards, said there were as many as five black ones this year. Whether the discrepancy is to be explained by two calves having some white about them I did not ascertain.

lingham, many of the cows, as well as the bulls, looking a dirty cream-colour about the neck. The cattle-keeper told me that there had been twenty calves born this year, including five black ones, which he said were always "the bonniest calves, and a' mostly quees." He had heard the story that they were all killed off but one during the last century, and that the way the herd was started again was by breeding with the sole surviving bull and a common cow. During the rinderpest the herd was reduced to eight, not because the disease attacked them, but because they were killed by order of the local authorities, a few young animals being hidden in corners of the park and down coal-mines.

MEASUREMENT (IN INCHES) OF HORNS ON STUFFED HEADS.

				Length of Horn, round curve.	Ditto in a straight line.	Between tips of horns.	Across fore- head between horns.	Length of head.	Circumfer- ence of horn at base.
CHARTLEY:									
Bull	-	-	-	29	...	27	11	19 $\frac{3}{4}$	...
„ another*	-	-	-	19	14	37 $\frac{1}{4}$	10	18	9 $\frac{1}{2}$
Cow	-	-	-	20	20	35 $\frac{1}{2}$	...	17 $\frac{1}{2}$	...
Ox	-	-	-	33	...	...	...	...	...
LYME:									
Bull †	-	-	-	25	13	9 $\frac{1}{4}$	10	21	...
CHILLINGHAM:									
Bull	-	-	-	25	14 $\frac{1}{2}$	15 $\frac{3}{4}$	7 $\frac{1}{2}$	...	...
Ox	-	-	-	29	...	...	7	20 $\frac{1}{2}$	...
„ another	-	-	-	19 $\frac{1}{4}$	14 $\frac{3}{4}$	15 $\frac{1}{4}$	6	...	9
HAMILTON:									
Bull	-	-	-	12	9 $\frac{3}{4}$	18 $\frac{3}{4}$	7 $\frac{1}{2}$	19 $\frac{1}{2}$	...
Cow	-	-	-	10 $\frac{1}{2}$	9	22 $\frac{1}{2}$	7 $\frac{1}{2}$	17 $\frac{1}{2}$	...

* This second bull's head, said to have belonged to the animal killed on the coming of age of the present Earl, is extremely different to any other in this herd, and is much more like the Chillingham heads, being covered all over with curly hair, about 2 $\frac{1}{2}$ inches long, and the general direction of the horns is upward.

† The only one preserved.

THE SOUTH AMERICAN MANATEE IN THE WESTMINSTER AQUARIUM.

BY THE EDITOR.

FOR the second time a living specimen of that singular animal, the Manatee, or Sea-cow, *Manatus americanus*, has been brought to England, and may be seen disporting itself in a large glass tank at the Westminster Aquarium. The first example of the kind which reached this country alive was exhibited in August, 1875, in the Zoological Society's Gardens, in an open pond near the Seal Enclosure. It only lived a month, however, owing probably to the water being kept at too low a temperature for an animal accustomed to a tropical climate. Previous to this date more than one attempt had been made to bring over a living Manatee; but although these efforts were unsuccessful, the arrival of some dead specimens, preserved in salt, proved of considerable value to zoologists, for Dr. Murie, who was then Prosector to the Zoological Society, was enabled to dissect and examine them, and he published a detailed account of the anatomical structure, concerning which at that time comparatively little was known.*

The Manatees, or "Sea-cows," as they are popularly termed, inhabit estuaries and shallow parts of the shore in the intertropical regions on the Atlantic coasts of South America and Africa. In structure they resemble the Dugongs, being placed with them in the order *Sirenia*,† and are said to be related to the *Cetacea*, or whales, on the one hand, and to the *Ungulata*, or hoofed quadrupeds, on the other. They agree with the whales and differ from the seals in the absence of mid-limbs, and in the possession of a horizontal tail-fin; but their nostrils are never used as blow-holes, although they can be opened and closed at will. They are as truly mammals as are the whales, seals and walruses, having warm blood, breathing by means of lungs, and bringing forth their young alive and suckling them. They have a hairy covering, too,

* See Transactions of the Zoological Society for 1872.

† The name *Sirenia*, applied collectively to the Manatees and Dugongs, is derived from the fact that these animals have a habit of sitting in a semi-erect position in the water, suggesting by their appearance the travellers' tales of Sirens and Mermaids, the illusion being heightened by their ability to flex their flippers over the chest, and fold their young in this way, so it is said, to the breast.

although this is but slightly developed. No outer ears exist, and the eyes are very small. The flippers, or paddle-like fore-limbs, are placed very far forward on the body, and possess rudimentary nails, evidencing the skeletal composition of its terminal parts, which necessarily correspond to fingers.

As might be inferred from the most cursory examination, the Manatee is purely aquatic in its habits. By drawing off the water from its pond, in the case of the specimen which lived in the Zoological Society's Gardens, and which was between six and seven feet long, it was ascertained that the creature is perfectly helpless on land, its only movement being a roll by the aid of the flippers and tail.

The dissection of this individual by Professor Garrod, and the previous examination of the salted specimens by Dr. Murie, resulted in the publication of some interesting information concerning the internal structure and anatomy. The number of vertebræ in the neck is one less than is usually possessed by the majority of mammals. In man and most other mammals the number of the cervical vertebræ is seven; in the Manatee only six, a peculiarity, so far as is known, shared by only one other animal—Hoffman's Sloth.

The mouth is a very singular one, having on either side a pad or side-lip covered with stiff bristles projecting inwards, with which its food, which is purely vegetable, is seized and conveyed to the mouth. The fore-lips, both upper and under, are comparatively small.

The mode of feeding has been compared by Mr. Garrod to that of a silkworm or other caterpillar, in which the jaws move horizontally instead of vertically. Mr. Tegetmeier, in a notice of this animal which appeared in 'The Field' of 6th July last, accompanied by a very characteristic illustration by Mr. T. W. Wood, has suggested that the arrangement of lateral lip-pads has a direct relation to the feeding of the animal on submerged aquatic leaves growing erect in the water like our flags and rushes, as these could evidently be much more easily gathered by lips opening laterally than by such as move up and down. The teeth are absent from the fore part of the jaws, their place being occupied, as in the upper jaw of a ruminant, by horny pads.

The Manatee being exclusively a vegetable feeder, the structure of the digestive organs is modified accordingly. The stomach is

complex, with several cavities; the intestines, as in all herbivorous animals, are of great length, being about seven times as long as the body.

The respiratory organs are no less remarkable. The nostrils are circular openings with valves, which are closed when the creature is below the surface of the water. The lungs are of unusual size and great length, enabling the animal, after once taking in air at the surface, to remain submerged for a considerable time before rising again.

The living specimen now in the Westminster Aquarium is fed upon lettuce and water-cress, and is kept in a large tank of water, the temperature of which is maintained at 70°, to suit its supposed requirements, and approximate the surrounding conditions, as nearly as may be, to what is found to exist in a state of nature.



PROVINCIAL NAMES OF BRITISH ANIMALS.

Norfolk.—In consequence of an intimation, in a recent number of 'The Zoologist,' that local lists of the names of mammals and birds would be acceptable, I have noted the following names now or formerly in use in the county of Norfolk:—

MAMMALIA.

Stoat. *Lobster*.
Weasel. *Mouse-hunter*.
Common Shrew. *Ranny*.
Badger. *Badget*; *Brock*.

These names for the badger are given by Forby, but are now obsolete, the animal being almost extinct in Norfolk.

BIRDS.

Short-eared Owl. *Woodcock Owl*.

I have also heard this name applied to the Long-eared Owl.

Barn Owl. *Madge*; *Jill-hooter* (Forby).*

An Owl.† *Billy-wix* (Forby).

Spotted Flycatcher. *Bee-bird*; *Beam-bird*; *Wall-bird*.

The two last names are evidently derived from the usual situation of the nest. The first term may be merely a corruption of the second.

Missel Thrush. *Fulfer*.

Apparently a corruption of Fieldfare.

Song Thrush. *Mavish*.

Evidently a corruption of the old English name "Mavis." The cotemporary term of "Merle" for the Blackbird seems to have become quite obsolete.

Fieldfare. *Storm-bird*.

* See also Hunt's 'British Birds.'

† Probably the Barn Owl.

Common Redstart. *Red-tail; Fire-tail.*

Stonechat. *Stone-chuck.*

Whinchat. *Furr-chuck.*

"Furr" is a corruption of Furze.

Wheatear. *White-rump; Coney-chuck; * Chock* (Sir T. Browne).

Sedge Warbler. *Sedge-marine.*

I am unable to conjecture the derivation of this name, which has[†] been communicated to me by Mr. F. Norgate as in use on Hickling Broad.

Nightingale. *Barley-bird* (Forby).[†]

Blackcap Warbler. *King Harry Blackcap; Black-headed Hayjack.*

Greater Whitethroat. *Hayjack.*

This name is also applied to the Lesser Whitethroat and to the Garden Warbler.

Willow Warbler. *Oven-bird; Oven-tit; Ground Oven.*

These names are taken from the nest, and are also applied to the Chiffchaff.

Common Wren. *Kitty Wren; Stag; † Tom-tit.*

Creeper. *Creep-tree.*

Nuthatch. *Nuthack* (Sir T. Browne).

Great Tit. *Sharp saw.*

Blue Tit. *Pick-cheese.*

This name is also applied, more or less frequently, to the Great, Marsh and Cole Tits. The two latter are called by some "Blackcaps."

Long-tailed Tit. *Long-tailed Capon; Bush-oven; Feather-poke; Pudding-poke; Bottle-tit.*

All these names, except the first, are derived from the nest.

Bearded Tit. *Reed Pheasant.*

Pied Wagtail. *Penny Wagtail*

Common Bunting. *Bunt Lark.*

Reed Bunting. *Reed Sparrow.*

Yellowhammer. *Guler.*

Chaffinch. *Spink; Wheatsel-bird.*

Two authorities give the last as a name applied to the male Chaffinch—probably from these birds congregating in autumn about the season of wheat-sowing.

Goldfinch. *Draw-water; King Harry Redcap; Fool's-coat.*

The last name, given by Sir T. Browne, is evidently derived from the motley dress of the fools or jesters of former times.

Linnet. *Grey Linnet; Brown Linnet; Red Linnet; Blood Linnet.*

The two last names evidently refer to red-breasted specimens, and the two former to those that are not so.

Hawfinch. *Coble-bird* (Sir T. Browne).

Greenfinch. *Green Linnet; Greenolf.*

Bullfinch. *Bloodolf.*

Carrion Crow. *Carner Crow; Carener Crow.*

These are probably merely corrupt pronunciations of Carrion Crow.

Hooded Crow. *Norway Crow; Danish Crow; Harry Dutchman.*

Jackdaw. *Caddaw; Cadder; Caddy.*

Magpie. *Chatter-pis* (Forby).

Green Woodpecker. *Green Woodspeck.*

Greater Spotted Woodpecker. *Black and White Woodspeck.*

Wryneck. *Cuckoo's Mate; Hobby-bird.* §

Swift. *Deviling; Devil-bird.*

Nightjar. *Dor-hawk* (Sir T. Browne); *Night-hawk; Razor-grinder; Scissor-grinder.*

The first of these names evidently refers to the food of the bird, and the two last to its note.

Wood Pigeon. *Dow.*

An evident corruption of Dove.

Quail. *Wet-my-lip.*

A West Norfolk name, probably derived from the call-note.

* Probably as frequenting rabbit warrens.

† See Stevenson's 'Birds of Norfolk,' vol. i., p. 123, as to this name.

‡ This name is given by Forby, but its derivation appears to be obscure.

§ "So called because it comes either with or a little before the Hobbies in the spring."—SIR T. BROWNE.

Golden Plover. *Whistling Plover*.
Lapwing. *Pee-weep*; *Horn-pie* *
(Forby).

Ring Dotterel. *Stone-runner*; *Dot-plover*.

Turnstone. *Tangle-pecker*.

"Tangle" is used on the Norfolk coast as the name of the broad dark sea-weed beset with small bladders.

Oystercatcher. *Sea-pie*; *Dickie-bird*.

Heron. *Harn* or *Hern*; *Harnsey*; *Frank*.

The last name from the note.

Common Bittern. *Bitour* (Sir T. Browne); *Bottle-bump* (Forby).

Spoonbill. *Shovelard* (Sir T. Browne).

An ancient and now obsolete name, another form of which was "Shullard."

Avocet. *Shoeing-horn* (Sir T. Browne).

Whimbrel. *May-bird*; *Half-bird*; *Half-curlew*; *Spowe*.

The first name probably from the season of the bird's arrival; the last a name applied to it in the Household Accounts of the L'Estranges of Hunstanton in the sixteenth century, but now obsolete.

Bartailed Godwit. *Pick*.

Black-tailed Godwit. *Shrieker* (Lubbock).

Green Sandpiper. *Summer Snipe*; *Martin Snipe* (Lubbock).

Knot. *Gnat* or *Knat*; *Knet*.

Whooper Wild Swan. *Elk* (Sir T. Browne).

Brent Goose. *Brant*.

Sheldrake. *Bargander* (Sir T. Browne); *Bay Duck* (Forby); *Rurrow Duck*.

Shoveller. *Spoonbeak* or *Spoonbill*; *Beck* (Lubbock); *Popeler*.

The last an ancient name attributed to this duck, but now obsolete.

Pintail. *Sea Pheasant*.

Wigeon. *Smee*.

Garganey. *Summer Teal*.

Pochard. *Poker*; *Dun bird*.

Scaup. *Grey-back*.

Tufted Duck. *Black Poker* (Lubbock).

Golden-eye. *Rattle-wing*.

Scoter. *Black Duck*; *Sea Duck*.

Long-tailed Duck. *Mealy-bird*.

Red-throated Diver. *Sprat-loon*; *Mag-loon* (*i. e.* Magpie-loon).

Great Crested Grebe. *Loon*.

Little Grebe. *Dabchick*; *Didapper*; *Dive-an-dop*; *Divy-duck*.

Puffin. *Parrot-bill*; *Sea Parrot*.

Foolish Guillemot. *Willock*; *Willy*.

Gannet. *Herring Gant*.

Common Tern. *Great Pearl*.

Lesser Tern. *Small Pearl*; *Dip-ears*.

Brown-headed Gull. *Scoulton Pie*; *Scoulton Peewit*; *Peewit Gull*.

Kittiwake Gull. *Sea Kitty*.

Great Black-backed Gull. *Saddle-back*.

Gulls generally, especially the larger sorts. *Cob*.

Gulls generally, especially the smaller sorts. *Mow*; *Sea-mow*.

Many of these names have come under my personal observation, whilst others have been recorded and communicated to me by my friend Mr. F. Norgate and my son, Mr. J. H. Gurney, jun. To these I have added some names taken from Sir T. Browne's notes on Norfolk Birds (temp. Charles II.); from Lubbock's 'Fauna of Norfolk'; from Forby's 'Vocabulary of East Anglia'; and from a few other published sources, including a paper by the Rev. H. T. Frere, which will be found in the first series of 'The Zoologist,' p. 2186.—J. H. GURNEY (Northrepps Hall, near Cromer).

* Apparently meaning a pied bird with a crest like a horn.

East Suffolk.—In accordance with the suggestion of the Editor, I venture to send a list of the provincial names of some of the more common animals in East Suffolk. It may be interesting to compare this list with that sent by Mr. Little from the extreme west of the country. Except in the case of the Greenfinch, scarcely two will be found precisely similar.

Missel Thrush and Fieldfare.	<i>Felfit.</i>	Nightjar.	<i>Dor-hawk.</i>
Song Thrush.	<i>Mavis.</i>	Peewit.	<i>Horn-pie.</i>
Spotted Flycatcher.	<i>Wall-bird.</i>	Heron.	<i>Harnser.</i>
Whitethroat.	<i>Hay-jack.</i>	Whimbrel.	<i>Brame.</i>
Meadow and Rock Pipit.	<i>Titlark.</i>	Stoat.	<i>Weasel.</i>
Chaffinch.	<i>Spink.</i>	Weasel, male.	<i>White-throat.</i>
Greenfinch.	<i>Green Linnet.</i>	„ female.	<i>Mouse-hunt.</i>
Goldfinch.	<i>King Harry.</i>	Shrew.	<i>Ranny.</i>
Bullfinch.	<i>Olp.</i>	Frog.	<i>Fresher or Freshey.</i>
Wryneck.	<i>Cuckoo's Mate.</i>	Newt.	<i>Swift.</i>

No difference, as a rule, is recognised between the Missel Thrush and Fieldfare, both being included under the name of “Felfit.” The word “Puttock” still exists here as a surname, although neither Kite nor Buzzard is known except as an occasional visitor. All our larger hawks and very many more of our most beautiful and interesting birds and animals are here persecuted with the utmost rigour, and are fast disappearing altogether. The Magpie is becoming quite a rare bird here, and how the Kestrel still manages to maintain a footing it is difficult to understand. The Pheasant reigns supreme, and everything has to give place to this game-bird.—G. T. ROPE (Blaxhall, Wickham Market).

Nottinghamshire.—Seeing in the June number of ‘The Zoologist’ that you express a wish that some of the readers would send lists of the provincial names of birds, I enclose the following, all of which I have heard used, most of them commonly.—J. WHITAKER (Rainworth Lodge, Mansfield, Notts.)

Missel Thrush.	<i>Sycok.</i>	Whitethroat.	<i>Peggy.</i>
Yellowhammer.	<i>Goldie.</i>	Marsh Tit.	<i>Black-cap.</i>
Chaffinch.	<i>Spink.</i>	Blue Tit.	<i>Tom-tit.</i>
Goldfinch.	<i>Proud Tailor.</i>	Long-tailed Tit.	<i>Bumbarrel.</i>
Pied Wagtail.	<i>Nanny Wagtail.</i>	Whinchat.	<i>Utick.</i>
Common Wren.	<i>Jintie.</i>	Heron.	<i>Heronshaw.</i>
Willow Wren.	<i>Sweet Billy.</i>	Magpie.	<i>Ninut.</i>
Redstart.	<i>Fire-tail.</i>	Woodpecker.	<i>Nickerpecker.</i>
Black-headed Bunting.	<i>Reed Spar-</i>	Corn Crake.	<i>Meadow Drake.</i>
	<i>row,</i>		

Oxfordshire.—I have collected the following list of local names during a residence of some years in Oxfordshire:—

Reed Bunting. <i>Reed Sparrow</i> .	Linnet. <i>Furze Linnet</i> .
Chaffinch. <i>Peafinch</i> .	Meadow Pipit. <i>Titlark</i> .
Chiffchaff and Willow Wren. <i>Feather-bed</i> .	Quail. <i>Quick-me-dick</i> .
Crow. <i>Gor Crow</i> .	Redstart. <i>Redtail</i> .
Creepers. <i>Tree Clipper</i> .	Missel Thrush. <i>Norman Thrush</i> .
Little Grebe. <i>Dabchick</i> .	Song Thrush. <i>Whistling Thrush</i> .
Hedgesparrow. <i>Billy</i> .	Pied Wagtail. <i>Dish-washer</i> .
Jay. <i>Jay-pie</i> .	Sedge Warbler, Greater and Lesser
Kestrel. <i>Bloodhawk</i> .	Whitethroat. <i>Haytit</i> .
Lapwing. <i>Peewit</i> .	Green Woodpecker. <i>Eccle</i> .

Whenever any Quail's eggs were obtained by the villagers, they called them "Quick-me-dick's," but I never could learn any derivation for the word.* The Kestrel is called a "Blood-hawk," owing to the blood-red colour of its eggs.—C. MATTHEW PRIOR (Bedford).

Westmoreland.—In compliance with the request of the Editor, for provincial names, I send a list of some which are current in Westmoreland:—

Mistle Thrush. <i>Chercock</i> .	Raven. <i>Corby</i> .
Dipper. <i>Water Crow</i> or <i>Bessy Doucker</i> .	Carrion Crow. <i>Doupe</i> or <i>Black-neb</i> .
Whinchat. <i>Gorschat</i> .	Rook. <i>Crä</i> .
Wheatear. <i>Stonechat</i> .	Magpie. <i>Piet</i> .
Whitethroat. <i>Streasmear</i> .	Swift. <i>Devilin</i> .
Pied Wagtail. <i>Watty</i> .	Ring Dove. <i>Cushat</i> .
Meadow Pipit. <i>Ling-bird</i> .	Lapwing. <i>Tuet</i> .
Yellow Bunting. <i>Bessy Blakeling</i> .	Heron. <i>Crane</i> .
Chaffinch. <i>Spink</i> .	Dunlin. <i>Sand-mouse</i> or <i>Sea-snipe</i> .
Goldfinch. <i>Flinch</i> .	Common Sandpiper. <i>Willy Wicket</i> .
Siskin. <i>Aberdavine</i> .	Landrail. <i>Daker-hen</i> .
Linnet. <i>Gray</i> or <i>Graybird</i> .	Scoter. <i>Doucker</i> .
Starling. <i>Shepster</i> .	Golden-eye. <i>Whiteside</i> .

Want of discrimination is frequently the cause of many different species being called by the same name. Thus, the Garden Warbler, Common Whitethroat and Lesser Whitethroat, in Westmoreland, are all called "Streasmear"; the Blackcap, Great Tit, Cole Tit, Marsh Tit and Black-headed Bunting are indiscriminately termed "Blackcaps." The word "Diver" is still more comprehensive, being bestowed on the Scaup, Pochard, Tufted Duck, and all the species of Merganser, Grebe, and Diver proper, *i.e.*, *Colymbus*.—THOMAS GOUGH (Arncliffe, Milnthorpe).

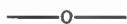
* The local name "Quick-me-dick" for the Quail is no doubt an imitation of the trisyllabic note of this bird.—ED.

North Riding of Yorkshire.—I have noted the following list of names as being in use in the neighbourhood of Nunnington, in the North Riding of Yorkshire:—

Blackbird. *Blackie*.
 Blue Tit. *Tom-tit*; *Billy-biter*.
 Carrion Crow. *Dowp* or *Dob-craw*.
 Chaffinch. *Bullie*.
 Chiffchaff. *Feather-poke*.
 Corn Crake. *Corn Drake*.
 Fieldfare. *Fellfer*.
 Goldfinch. *Redcap*.
 Hedge Accentor. *Cuddy*.

Heron. *Heron-sewe*.
 Lapwing. *Teeafit*.
 Common Redstart. *Jenny Redtail*.
 Ring Dove. *Cushat*.
 Rock Dove. *Blue Rock*.
 Rook. *Craw* (Crow).
 Starling. *Gyp*; *Gyp Starnill*; *Stare*.
 Whitethroat. *Nettle-creeper*.
 Yellowhammer. *Goldie*.

With regard to the provincial name in this district for the Chaffinch, it may be remarked that the Bulfinch is a scarce bird with us, and its name, in an abbreviated form, is erroneously applied to the former.—WALTER STAMPER (Highfield, Nunnington, Oswaldkirk, York).



OCCASIONAL NOTES.

GOATS EATING TOBACCO.—I can almost cap Mr. Henry Reeks' story of a Goat eating all the tobacco in a friend's pouch (p. 206.) Nearly thirty years ago, when I was a midshipman in the "*Orestes*," on the east coast of Africa, we had a goat on board which habitually ate tobacco. I have seen her devour a whole cake of 'Cavendish' at a time. She also drank rum and water with gusto; and on one occasion she ate up nearly the whole of a Latin dictionary of mine,—a "royal octavo" volume.—WILLIAM H. HEATON (Meadow Croft, Reigate.)

WHITE-NOSED DOLPHIN ON THE IRISH COAST.—We have long had, in the Museum here, a coloured cast of a dolphin, captured, some fifteen years ago, in the vicinity of Dublin Bay, which, lately, by comparing a coloured sketch taken from the fresh animal with the excellent figure given in the 'Proceedings of the Zoological Society' (1876, p. 679, pl. lxiv.), I was able to identify as *Delphinus albirostris* (J. E. Gray). So little is known critically of the Irish species of *Delphinus* that it seems very probable some of the dolphins hitherto passing under the name of *D. tursio* really belonged to *D. albirostris*, of which the figures given in the 'Annals of Natural History' and Bell's 'British Quadrupeds' are very far from satisfactory.—A. G. MORE (Museum of Science and Art, Dublin).

REARING WATER OUZELS IN CONFINEMENT.—Attempts have frequently been made to rear the Dipper, or Water Ouzel, in confinement, but without success. Mr. Bartlett, the energetic superintendent of the Zoological Society's Gardens, has on several occasions received the newly-fledged young of this bird, and has repeatedly, although unsuccessfully, endeavoured to rear and keep them alive. Whether this want of success was owing to uncertainty as to the proper food to be administered, or whether the peculiar temperament of the bird rendered it unable to brook confinement, was for some time doubtful. By trying almost every kind of insect and other food, Mr. Bartlett succeeded for a while in rearing the birds; but just when his efforts appeared likely to succeed, a change would take place, and the birds would die, one after the other. Sometimes they would get too wet, and would apparently die of cramp; others that had been kept away from the water wasted and died of exhaustion. It was evident that he had not discovered a food that suited them. They had been tried with the usual food for most insect-eating birds, such as scraped beef, and hard-boiled eggs, ants' eggs, meal-worms, spiders, flies, beetles, aquatic snails, shrimps, salmon-spawn, &c., but all failed, until at the suggestion of his assistant, Mr. Arthur Thomson, he tried the experiment of feeding them on scalded meal-worms; it was soon apparent that in this condition the meal-worms could be digested, while in a raw or living state (especially their tough skins) would pass through the birds in a hard and undigested condition. After this experiment, he had little trouble. The birds fed greedily upon half-boiled meal-worms, and were soon ready to leave the nest. He accordingly fitted up a cage, having the nest under a piece of rock-work at one end, and a shallow pan of water at the other, in which the birds soon began to dive and swim about. This spring, Mr. Bartlett procured from Merionethshire six Dippers from two different nests, and under the above treatment they have been successfully reared, and have become very tame. Writing under date June 13th to a contemporary, Mr. Bartlett says:—"They are now about six or seven weeks old, feed themselves or nearly so, being excessively tame, and they still come to be fed by hand. Since they have taken to feed themselves, the food has been greatly varied by introducing caddis-worms, and other aquatic insects of small size, found among the weeds: this affords them much amusement, and they throw up castings, or pellets, after the manner of raptorial birds; the pellets consist of the parts of the insects that are not digested. It is most interesting to watch their movements, bobbing up and down, flying from place to place, and diving under water and extracting the caddis from its curious covering. I can no longer doubt that the charges brought from time to time against our pets—of appropriating a small portion of the young trout or salmon-fry—are true, for they are most expert fishers; but I feel perfectly satisfied they do not eat the roe or spawn of fish. As I have before

stated, unless there is some movement, these birds do not eat anything they find. In diving, the Dipper uses its wings as though it was flying under water, and has to exert considerable force to remain under long enough to capture its food; it is so buoyant that it floats to the surface like a cork. The song of the Water Ouzel is said to be louder, but in other respects much resembles that of the Wren. Our young birds already give indications of their vocal music. I can find no very correct description of the movements of the Dipper; I take, therefore, this opportunity of stating that the bird runs about rapidly after the fashion of a Starling. It jumps or hops a considerable distance; it flies well, and swims like a duck."—J. E. HARTING.

NESTING HABITS OF THE STONECHAT, WHEATEAR AND WHINCHAT.—There are, perhaps, no three nests more difficult to find than those of the above-named birds, from the situations chosen, and from the wariness of the owners on the approach of danger. Stonechats frequent commons, heaths, waste places, and the lower sides of hills and mountains where there is furze, brambles, and plenty of undergrowth. Several pairs may generally be seen in the same neighbourhood. I have seen them in numbers in the New Forest, and also on the hills, and by the coast in North Wales. They may be seen sitting on the tops of the bushes and furze, as also on telegraph wires, and are restless and active in their habits. Their song is sweet, and their call-note, which they utter incessantly on being approached, resembles the words, "wee-chat chat; chat chat chat." The nest is placed on or near the ground in a furze-bush, or bank, amongst long grass or undergrowth, and the entrance to it is generally enlarged, probably from the bird's passing in and out to the nest, which is placed some little way in. It is built of moss, and lined with quantities of hair and feathers. I found three nests in Wales this year early in June, one just built, another with five fresh eggs, the third with five eggs nearly chipping. The eggs were all very similar in appearance, of a greenish ground, very like the Blackbird's, and faint brown spots especially towards the larger end. I have one in my possession, on which the brown spots form a ring round the larger end of the egg, but the other specimens are spotted more or less all over. They are about the size of Hedgesparrow's eggs. On the approach of any one to the vicinity of the nest, the male bird, a handsome fellow with a black head and a good deal of white about the neck, immediately gives the cry of alarm, and the female quietly leaves the nest and joins him. They flit about from bush to bush with their "chat chat chat," leading one everywhere but to the nest, and taking care that the coast is quite clear before they return. If the nest be approached suddenly, the female will sit very closely. This bird is said to breed twice in the season, but I never saw any young ones either in May or early June. In their habits of getting insects, on which they principally feed, they resemble the

Flycatchers. Wheatears frequent hilly barren spots, and are found in the neighbourhood of stone walls, old lime-kilns, gravel pits, and similar places, generally preferring wild uncultivated districts, such as mountain-tops and sides, especially old stone quarries. They breed about the middle of May, and conceal their nest in the most clever way; in fact, unless you can detect the birds going to or from it, you may search for hours in vain. I once saw a nest on a hill-side in Cumberland under a huge projecting stone. A friend who was with me, seeing a pair of these birds leave the spot, began to search, and looking under this stone he saw what proved to be a nest. It was at arm's length underneath, built on the ground, and made of hay and dead grass, lined with finer parts of the same material. It was rather a large structure, neatly put together, and contained seven fresh eggs of a very pale blue. This was at the end of May. This year I found one, by watching the birds, on the 3rd of June. It contained young ones nearly fledged, and was built amongst some loose small stones that had been thrown out from where a stone-quarry had been worked. I had to take up a good many stones before I could find it. The young ones came to the surface to be fed. They are very fond of the bottom of a stone wall with an escape on either side, and in such situations I have searched and pulled down stones for hours in a vain attempt to secure them. The birds are very noisy on being approached, and have the same kind of call as the Stonechat, only louder, and with a more plaintive and distinct "wee" before the "chat-chat." Their flight is short and jerky, and they generally settle on walls or stones, or on the ground. They hop with great facility, and hover in the air at times like a Flycatcher while in pursuit of insects. They must be very common in Norway, for their eggs may be purchased there for a half-penny each. I never saw one settle on a tree. The white feathers on the tail are very conspicuous when they fly.—Whinchats, or as they are called here, "Uticks," from their call-note, prefer more cultivated districts, or the neighbourhood of more cultivated districts, than the two preceding species. They arrive in the midland counties early in May, and breed about the middle or end of that month, choosing meadows, mowing grass, and banks by the side of roads, as well as places similar to those selected by the Stonechat. They are often to be found, too, on commons and waste places. The nest is most difficult to find, unless the mowers come across it, which they not unfrequently do. It is built on the ground, and one I found on a bank where there was some furze had a run through the grass to it. I was beating about, and started the bird. The nest contained six dull-blue eggs, very like those of the Hedgesparrow. It is often built at the bottom of a hedge or in the grass at the foot of it, and is a loose structure of grass and moss, lined with fine grass and a few hairs. Sometimes the eggs have a few brown spots on them. The song of the Whinchat is sweet and wild, and the bird may be

frequently seen on the top of a tree or the topmost or outside bramble of a hedge, where it sways about with the wind, uttering its call of "U-tick, tick, tick," occasionally introducing a "chat, chat." They feed on flies, beetles, &c., and much resemble Stonechats in their pursuit of them and flight. They sit closely, and make a great fuss on the nest being approached.—H. G. TOMLINSON (The Woodlands, Burton-on-Trent.)

THE GLOSSY IBIS IN DORSETSHIRE.—The Glossy Ibis is occasionally met with in the neighbourhood of Poole Harbour. In 1859, to my knowledge no less than six of these birds occurred there; and, as I believe no mention of them has been made in The 'Zoologist,' it may be as well to record them. Five of the specimens in question are now in Wareham, one of them in my own possession. They were killed in the autumn in the upper part of the harbour, or rather on the marshes surrounding the mouths of the two rivers Frome and Trent. They were probably all young birds, being in dull plumage, and wanting the richer shades of chestnut which characterise the adult. A man named Gover told me that one stormy, wet morning in October, 1877, while going down to Poole in a "lighter" behind a tug steamer, just after daylight, he saw four birds on the mud at the edge of a small creek running into the Wareham channel; that they were like Curlews in appearance, but stood a little higher on their legs, and were black in colour. This information he volunteered, remarking at the same time that he had no doubt the birds were "Ibises—same as I shot afore," alluding to the fact of his having killed one of the birds procured in 1859. I think there can be no doubt that this species visited us again last year; but I am unable to state the fact from personal observation. The man said the birds were very tame, allowing the tug and lighters to pass close by them, without offering to move; on their return from Poole the flowing tide had covered the banks, and of course the birds were gone. The man's evidence was corroborated by the men on the tug. I have known him a long time, and he is very intelligent with regard to the harbour-birds. His occupation having necessitated his going up and down between Wareham and Poole on an average oftener than once a day for the last twenty or thirty years, he has naturally had good opportunities for observation. He has not shown much worldly wisdom, however, in the price he has asked and accepted for some of the rarer birds shot by him, *e.g.*, half-a-crown for a splendid specimen of "Sabine's Snipe," and five shillings for a perfect adult-plumaged Common Crane (*Grus cinerea*.) He had some difficulty in getting so much for it, and had actually determined to take it home and eat it, as it was a large fat bird, and he calculated that it would be of more use to his family in the way of sustenance than the half-crown he was munificently offered for it! At last, however, he got his five shillings, and the Crane was saved.—T. M. PIKE (Westport, Wareham).

RED-BACKED SHRIKE NESTING NEAR LONDON.—Owing to the spread of new buildings, and the cutting down of trees and hedges round London, small birds are very scarce in certain directions. It is, therefore, curious to find so shy a bird as the Butcher-bird making its nest within four miles of Charing Cross. During the last week of May, 1877, I found a Butcher-bird's nest, containing three eggs, in a tall hedge in a field at Kilburn.—HUGH HARTING (27, Carlton Hill, N.W.)

MONTAGU'S BLENNY (*Blennius gallerita*, Linn.) IN IRELAND.—As this little fish is, I believe, not generally known to be found on the shores of Ireland, I may mention that I have captured it in two localities, viz., first (when in company with my friend Mr. William Andrews), in rock pools at the entrance of Dingle Harbour, Kerry, in August, 1868; and soon afterwards, in 1869, I met with it again on the coast and islands of Connemara, where it was often to be seen in the same rock-pools with *Echinus lividus*. It is very similar to small specimens of the Shanny, *Blennius pholis*, but is, of course, easily known by the frontal crest. Specimens from both localities are to be seen in the Museum of Science and Art, Dublin.—A. G. MORE (Museum of Science and Art, Dublin).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 20, 1878.—Professor ALLMAN, F.R.S., President, in the chair.

William Cattell, Esq., Surgeon 10th Royal Hussars, Rawal, Pindee, India, was elected a Fellow of the Society.

The Vice-Presidents nominated were George Busk, Esq., W. Carruthers, Esq., Lieut.-Col. Grant, and Dr. J. Gwyn Jeffreys.

Dr. J. Gwyn Jeffreys exhibited specimens of *Virgularia* lately dredged by himself and the Rev. A. M. Norman in the Osterfjord, Norway, at a depth of ten fathoms. These appear to be a species new to science, and will be described as such hereafter by Dr. Danielssen.

Dr. J. Gwyn Jeffreys then read a "Notice of some Shells dredged by Captain St. John, R.N., in Korea Strait." This dealt with but a part of the collection obtained. Of fourteen species enumerated, six, viz., *Anomia ephippium*, *Pecten similis*, *Lepton sulcatulum*, *Axinus flexuosum*, *Panopea plicata*, and *Turbo sanguineus* are noticed for the first time as living in the North Pacific as well as in the Atlantic; *Nucinella ovalis* and *Kellia pumila*, which had been regarded as extinct, the former not only specifically but generically so, are now recorded as recent. The other six species, viz.,

Terebratula caput-serpentis, *Crenella decussata*, *Lasæa rubra*, *Saxicava rugosa*, *Puncturella Nouchinæ*, and *Embolus rostratus* were already known to inhabit the Pacific and Atlantic Oceans. No less than nine out of the fourteen species are coralline crag fossils. The author finds that the present series of shells tends to corroborate views that he had already expressed, namely, that certain species of Mollusca which are common to the North Atlantic and North Pacific Oceans might have originated in high northern latitudes, and have found their way to Japan on the one side and Europe on the other, by means of a bifurcation of the great Arctic current. Captain St. John's independent opinion and observations tend to strengthen this idea.

The Secretary read, for Capt. W. P. Armit, "Some Notes on the Presence of *Tachyglossus* (= *Echidna*) and *Ornithorhynchus* in Northern and North-Eastern Queensland." It is here shown that the *Echidna* occurs at Bellenden Plains, situated some thirty miles N.E. of Cardwell in about 18° S. lat., which appears to be the most northern limit yet recorded in the Australian continent. Captain Armit has met with the *Ornithorhynchus* 150 miles west of Georgetown on the road to Normanton. It also occurs on the Leichardt River, so that its northern limit would appear to be the same, *i.e.* about 18° S. lat.

Dr. J. Murie, in a note, called attention to the above-mentioned *Echidna* skull which had been forwarded for comparison. It agreed in all particulars with that of *Echidna histrix* and that supposed to be specifically distinct,—to wit, *E. setosa*,—these forms now being generically distinguished as *Tachyglossus*. At a glance it could be seen to differ markedly from the new genus and species of *Echidna* (*Acanthoglossus Brujinii*, Peters and Doria) found in northern New Guinea and lately described in detail by Professor Gervais.

The abstract of a paper, "On the Shell of the *Bryzoa*," by Arthur W. Waters was taken as read.

The main points of a paper, entitled "Observations on the White Whale (*Beluga leucas*) exhibited at the Westminster Aquarium" were given orally by Dr. J. Murie. These notes chiefly related to the times and manner of breathing, certain outward peculiarities, visual organ, and movements of body and tail in its progression round the tank, and other subsidiary topics physiologically and functionally considered. Respiration in and out of the water are not quite identical, nor in either element is there perfect regularity in the intervals of respiration. A flow of blood, supposed by some to be of a menstrual character, was shown to have resulted from congestion of the right kidney. The fecal excrement presented peculiar characters, possibly, however, dependent on the liver being out of order, and long fasting; for the specimen in question does not seem to have partaken of food (or this only very slightly) after capture. A fungus (*Saprolegnia*

ferax, lately known as the "salmon disease") was detected growing on the skin and particularly plentiful around the spots of injury received during its capture. Another specimen of the *Beluga*, kept in the same tank, was more lively in its movements, and remained longer submerged between each surface respiration.—J. MURIE.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 5, 1878.—H. W. BATES, F.L.S., F.Z.S., President, in the chair.

Mr. John A. Finzi exhibited a remarkable female specimen of *Anthocharis cardamines*, taken in Darenth Wood, Kent. The under side only of one fore wing possessed an orange patch.

Mr. F. Grut exhibited a specimen of an immature *Mygale* from South Africa.

Mr. D. Greig Rutherford exhibited a series of large cocoons sent by Mr. George Thomson from Mount Camaroons, West Africa, formed by the caterpillars of a species of *Bombyx* allied to *Anaphe Panda*, Bdv. They were taken at an elevation of 5000 feet above the level of the sea, and judging from the nature of certain twigs and pieces of native cord fastened to their exterior covering appeared to have been found attached to fences or to the eaves of houses. It would appear that *A. Panda*, like some other species of *Bombycidae*, is social, and that the caterpillars unite in considerable numbers in order to form an aggregate cocoon of sufficient strength to preserve the chrysalis from the attacks of enemies, and probably also against extreme changes of temperature.

Mr. H. T. Stainton stated that the two small ermine moths (*Hyponomeuta padella* and *H. evonymella*) of this country were distinguished from one another by the fact that the larvæ of one species spin up gregariously in close proximity, while those of the other species scatter themselves before spinning up.

Mr. Rutherford next exhibited a specimen of a *Papilio* which appeared to be a true case of so-called "hermaphroditism" occurring between *Papilio Cynorta* and *P. Boisduvalianus*, the left side of the wings showing the markings (somewhat interrupted) of the former, and the right side those of the latter species. This specimen seems to confirm the suspicion that the two forms are but the sexes of one species.

Mr. Meldola exhibited photographs of two species of tropical Orthoptera allied respectively to *Pterochroza illustrata* and *P. ocellata*, Serville, which had been sent to Mr. Darwin by Dr. Zacharias, of Chemnitz, on account of the very perfect leaf-like appearance of the fore wings, this "protective resemblance" extending to microscopic detail. The hind wings were ornamented with ocellated spots, probably acquired through sexual selection.

Mr. Meldola also exhibited some beetles of the genus *Spermophagus* and their cocoons, which had been found in a packet of seeds of *Cassia neglecta* sent from Brazil by Dr. Fritz Müller to Mr. Darwin. The full-grown larvæ had emerged from the seeds, leaving the latter in a damaged condition, and had spun the small cocoons from which the beetles had issued, these insects having reached this country alive. Mr. Meldola next exhibited the proboscis of a Sphinx-moth caught by the narrow tube-like nectary of a pale yellow *Hedychium*. This specimen had also been sent from Brazil by Dr. Fritz Müller, who states that Sphinx-moths are frequently found caught in this manner. Mr. Meldola, in conclusion, stated that he had been requested by Dr. Fritz Müller to ask the Members of the Entomological Society to aid him in his microscopical examination of the scent-producing organs of Lepidoptera by sending to him, addressed to Blumenau, Santa Catharina, Brazil, wings of butterflies, especially of such species as are not found in that country, the names of the insects in all cases to be given.

Sir Sidney Saunders communicated some notes by M. Lichtenstein, "On *Phylloxera vastatrix* and other Plant-lice," giving conclusions derived from ten years' breeding of large numbers of root- and leaf-lice.

The Secretary read a paper communicated by Dr. Fritz Müller, entitled "Notes on Brazilian Entomology," in which the author gave the results of his observations on the odours emitted by butterflies and moths, as well as facts bearing on various other subjects more or less connected with the theory of Evolution.

Mr. Meldola, in illustration of the foregoing paper, exhibited the wings of *Antirrhæa Archæa*, showing the "scent-fans" sent over from Brazil by the author of the paper, and likewise a specimen of *Mycalesis Drusia*, Cram., captured by himself in the Nicobar Islands in 1875, and displaying the "scent-fans" of the hind-wings in a very conspicuous manner.

The President remarked that when collecting on the Amazons he had often observed the strong odour of vanilla emitted by certain butterflies. Without a more complete examination of the evidence, however, he was not prepared to admit that the tufts of hair or manes on the wings, &c., of butterflies were the scent-secreting organs.

Mr. Wood-Mason stated that no exception could be taken to Dr. Müller's view from a morphological standpoint, since the hairs, which are modified scales, are in communication with the fluids contained in the tissues of the wing, and thus might easily secrete odours.

With reference to the odours emitted by other insects, Mr. McLachlan remarked that when in Sydney he had found, in the bush round that town, a cockroach which gave out a most powerful smell. He also referred to the well-known odour of *Chrysopa*, which is emitted by two or three British species of the genus. No special scent-secreting organ has, however, as yet been detected in these insects.

Mr. Distant stated that he had recently received from the Andaman Islands some cockroaches, which likewise emitted a strong odour.

Dr. Sharp communicated a paper "On some Longicorn Coleoptera from the Hawaiian Islands."

Mr. Peter Cameron communicated a paper "On the Larvæ of the *Tenthredinidæ*, with special reference to Protective Resemblance."

Mr. H. W. Bates read a paper "On *Macropsebium Cotterilli* and other new Species of Coleoptera from Lake Nyassa." The author exhibited a specimen of the remarkable Longicorn beetle above referred to, which is of special interest on account of its possessing some characters of the *Prionidæ*.—R. MELDOLA, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Narrative of a Voyage to the Polar Sea during 1875-6 in H.M. Ships 'Alert' and 'Discovery.' By Capt. Sir G. S. NARES, R.N., K.C.B., F.R.S., Commander of the Expedition. *With Notes on the Natural History*, edited by H. W. FEILDEN, F.G.S., C.M.Z.S., F.R.G.S., Naturalist to the Expedition. 2 vols., 8vo, with illustrations. London: Sampson Low, Marston & Co. 1878.

ON the 2nd November, 1876, Her Majesty's ships 'Alert' and 'Discovery' re-entered Portsmouth Harbour, which they had quitted on a voyage to the Polar Sea on the 29th May, 1875. The expectations which were entertained regarding their reaching the North Pole were not realized, but in the opinion of the Commander of the Expedition, this was due solely to the fact that the North Pole is unattainable by the Smith Sound route.

Of the adventures which befell the gallant officers and crews of these vessels, during their absence of a year and five months, a complete narrative is now given in the volumes before us, and is rendered all the more interesting from the accompanying maps and "permanent Woodbury prints," which exhibit with photographic accuracy some of the more remarkable scenes through which the vessels passed.

The story of the English Arctic Expedition of 1875-6, at least in its general outline, must by this time be tolerably familiar to most persons; for not only have the papers been full of it, but so long an interval having elapsed since the return of the Expedition,

many people have had opportunities of hearing, more or less directly, from the explorers themselves, the chief features of interest in connection with it. It has been left to Sir George Nares, however, to bring together in a connected form, first a plain unvarnished narrative of the voyage; secondly, the scientific results of the Expedition, including a meteorological abstract and an abstract of results obtained from the tidal observations; and thirdly, an account of the Ethnology, Zoology, Botany, and Geology, as worked out by specialists in every branch of these sciences from the Reports furnished by the Naturalists to the Expedition, and the collections brought home by them.

With the first and second of these divisions we do not propose to deal; for the former has been already commented on sufficiently by far more competent critics than the writer of the present notice, and the latter scarcely falls within the province of a magazine devoted exclusively to Zoology. It is with regard to the third division of the subject that we propose to offer a few remarks, and we are the more disposed to enter into detail on this head, since in all the reviews of this work which have come under our notice, the writers have generally regretted their inability, "for want of space," to deal with the "Appendix," which contains the Natural History of the voyage.

Captain Feilden's contributions last year to 'The Zoologist' on the Ethnology of the Arctic Regions, and the Mammalia of North Greenland and Grinnell Land,* and his excellent paper in 'The Ibis,'† on the species of birds met with by the Arctic Expedition in Smith Sound and northward between the 78th and 83rd degrees of north latitude, may be said to have paved the way for his more extended observations in the first three chapters of the Appendix to the present work. It is unnecessary, therefore, to say much on this portion of the subject, although some of the observations recorded, especially with regard to the northernmost range of the Mammalia met with, are of great interest.

The Walrus, it appears, does not proceed further north than the meeting of the Baffin's Bay and Polar tides near Cape Frazer. On August 31st, 1876, a large seal, *Phoca barbata*, was shot in Dobbin Bay by Hans, the Greenlander, on board the 'Discovery.' It weighed 510 pounds, and on taking off its skin an Eskimo

* 'The Zoologist,' 1877, pp. 313—321, 353—361.

† 'The Ibis,' 1877, pp. 401—412.

harpoon was found buried in the blubber on its back; the socket of the dart was made of ivory, the blade being wrought-iron. Hans pronounced it to be a Greenland harpoon-head, and suggested that the animal had been struck in the Danish settlements.

Although there is no risk of the speedy extinction of the Greenland Whale, *Balæna mysticetus*, it is probable, says Capt. Feilden, that in a few years the fishing will no longer prove profitable to the fine fleet of whalers that now sail from our northern ports; and he sees no hope of Arctic discovery increasing our knowledge of the range of this animal.

The account given of the Musk-ox (vol. ii., pp. 198—202) should be read *in extenso*. Musk-oxen were obtained in considerable numbers near to the winter-quarters of the 'Discovery,' over forty being shot; but in the extreme north of Grinnell Land, nearer to the winter-quarters of the 'Alert,' they were much scarcer, only six having been obtained by the crew of that vessel. The cause of the disagreeable odour which frequently taints the flesh of these animals has received no elucidation from Capt. Feilden's observations. It does not appear to be confined to either sex, or to any particular season of the year; for a young unweaned animal killed at its mother's side, and transferred within an hour to the pot, was rank and objectionable, whilst the flesh of some adult animals of both sexes was dark, tender, and well-flavoured.

The extraordinary development of the claws on the fore-feet of the Lemming attracted some attention, and Capt. Feilden was enabled to determine that this development is seasonal, and analogous to what is observable in some of the *Tetraonidæ*.

The birds met with by the Expedition are well-known Polar forms, and the chief interest lies in the record of their great northern extension in the western hemisphere. The extreme shyness of all the species observed was remarkable. Until nesting time, it was no easy matter to get within range.

Those who, like Capt. Feilden, had been accustomed to find that delicate-looking summer visitor to the British Islands, the Arctic Tern, depositing its eggs on warm shingle under a June sun, must have been astonished to find it nesting in deep snow on a small islet off the north end of Bellot Island (lat. 81° 44' N.). In one nest was found a newly-hatched Tern, which seemed quite well and lively in its snow cradle. The parent birds had evidently thrown the snow out of the nest as it fell; for it was surrounded

by a border of snow, marked by the feet of the old birds, and raised at least two inches above the general level (vol. ii., p. 213). This circumstance somewhat upsets one's notions regarding the cause of migration, which we have been accustomed to consider as dependent chiefly on change of temperature and abundance or scarcity of food. In this instance there seemed to be no lack of food, for there were plenty of fish in the pools between the floes, and the old birds were seen carrying them in their bills. The numerous small crustaceans also, which are common on the shores of the Arctic Sea, would probably furnish sufficient sustenance to the parent birds should fish be inaccessible by reason of the ice.

At page 210 of the Appendix a coloured plate is given of two eggs of the Sanderling, *Calidris arenaria*, which were found by Capt. Feilden in lat. 82° 33' N., on June 24th, 1876. This nest, from which he killed the male bird, was placed on a gravel ridge at an altitude of several hundred feet above the sea; and the eggs were deposited in a slight depression in the centre of a recumbent plant of willow, the lining of the nest consisting of a few withered leaves and some of the last year's catkins.

The eggs of the Knot, *Tringa canutus*, he was not so fortunate as to obtain, though it breeds in some numbers along the shores of Smith Sound and the north coast of Grinnell Land. It must be common throughout the Parry Islands during summer, for Sabine found it nesting in great numbers on Melville Island. Captain Feilden and his companions frequently sought for the nest, but without success. However, on July 30th, 1876, the day before they broke out of their winter-quarters, where they had been frozen-in eleven months, an old Knot with three nestlings were found on the border of a small lake, not far from the ship. A description of the plumage of these nestlings is given on page 212.

On June 21st, the first nest with eggs of the Brent Goose was discovered in lat. 82° 33' N., and subsequently many were found (vol. ii., p. 216).

Ten species of fishes were collected between lat. 78° and 83° N., and were submitted for determination to Dr. Günther. Of these, two proved to belong to species hitherto undescribed, and have been named by Dr. Günther *Salmo arcturus* and *Salmo Naresii*. The former, a species of Charr, is the northernmost salmonoid at present known. It comes nearest to the Charr of Killin (Inverness-shire), but differs from it in having a more slender body, rather

smaller scales, shorter fins, and a less number of pyloric appendages. Several specimens were procured in the Victoria Lake (lat. $82^{\circ} 34' N.$), and in fresh-water lakes near Floeberg Beach (lat. $82^{\circ} 28' N.$). The fish which has been named after Sir George Nares is a small one, the largest specimen obtained measuring only ten inches in length. Several were caught in a freshwater lake near the winter-quarters of the 'Discovery.'

The chief interest attaching to the Mollusca obtained during the Arctic Expedition arises from the collections having been made at localities further north than any which had been previously investigated. The specimens brought home have all been identified by Mr. Edgar Smith, of the British Museum, who has made the Mollusca his special study, and a new species, *Trichotropis tenuis*, has been found amongst them. A description of this shell, with a figure, is given on page 226. A single specimen only was found, in twenty-five fathoms, off Cape Louis Napoleon, Grinnell Land (lat. $79^{\circ} 38' N.$), by Capt. Feilden.

The entomological collections brought home from between the parallels of 78° and $83^{\circ} N.$ latitude, showed quite unexpected and, in some respects, astonishing results. In all, there are about forty-five species of true Insecta and sixteen Arachnida. Of the former five pertain to Hymenoptera, one to Coleoptera, thirteen to Lepidoptera, fifteen to Diptera, one to Hemiptera, seven to Mallophaga, and three to Collembola. Of the Arachnida six are true spiders and ten are mites. These were all placed in the hands of Mr. R. M'Lachlan for examination, and with the assistance of Baron von Osten-Sacken, the Rev. O. P. Cambridge and the late Mr. Andrew Murray, a careful report has been drawn up (Appendix, pp. 234—239). Mr. M'Lachlan has no hesitation in saying that the most valuable of all the zoological collections brought home by the Arctic Expedition are those belonging to the entomological section; for they prove the existence of a comparatively rich insect fauna, and even of several species of showy butterflies, in very high latitudes. Amongst the Insecta is a new ichneumon; and two new butterflies and four new spiders are described. The only species of Coleoptera in the collection is represented by one example of the brachelytrous *Quedius fulgidus* from Discovery Bay, a very widely distributed insect, common in Britain. The paucity of insects of this order, as Mr. M'Lachlan observes, is inexplicable.

The Crustacea collected have been carefully examined and named by Mr. E. J. Miers (Appendix, pp. 240—255), assisted by the Rev. A. M. Norman and Dr. George Brady, and figures are given of some of the more noteworthy species.

In the same way, the Annelids have been worked out by Dr. M'Intosh; the Echinoderms by Prof. Duncan and Mr. W. P. Sladen; the Polyzoa by Prof. Busk; the Hydrozoa by Prof. Allman; the Spongidae by Mr. H. J. Carter; and the Rhizopoda by Mr. H. B. Brady.

The botanical collections, from lat. 80° — 83° , of which Sir Joseph Hooker has given an account (Appendix, pp. 301—326), prove that the vegetation of this meridian of the Polar area is entirely Greenlandic, showing no further relationship than does Greenland itself to the floras of the American Polar islands to the west of it, and of Spitzbergen to the east of it. In other words, it possesses Greenland plants that are wanting in either or in both of these localities, and wants plants that either or both of those regions possess, but which are absent in Greenland. No fewer than sixty-nine identifiable flowering plants and ferns, and half-a-dozen more in too imperfect a condition to be named accurately, have been brought by the Expedition from the latitudes above mentioned; besides nearly as many more from the Greenland coast south of it.

Capt. Feilden's remarks on the geological structure of the coasts of Grinnell Land and Hall Basin occupy a considerable number of pages (pp. 327—345), and will repay attentive perusal.

If the main object of this Expedition was not attained, it cannot be said that the explorers were less successful than any of their predecessors. In the words of Admiral Richards, "The bold and skilful seamanship which carried the ships to the extreme limit of navigation, and placed the 'Alert' alone in a position in which no ship before had ever passed an Arctic winter, was worthy of the leader, and an earnest of what would have been accomplished had it been in man's power to command success. The subsequent deeds of the officers and crews, under circumstances of trial and suffering which have rarely been equalled, have never been surpassed."

If our knowledge of polar geography has not been greatly enlarged by this the latest exploration, the scientific results of the Expedition have been considerable; and the statistics now

before us must be deemed to be well worth the labour expended in procuring them by those to whose zeal and energy the present work will form a lasting monument.

Through the Dark Continent; or, the Sources of the Nile, around the Great Lakes of Equatorial Africa, and down the Livingstone River to the Atlantic Ocean. By HENRY M. STANLEY. 2 vols.; with Maps and Illustrations. London: Sampson Low, Marston & Co. 1878.

THE two handsome volumes, recently published under the above title, may be briefly described, as embodying the result of Mr. Stanley's attempt to solve three important problems of African geography, namely, the true source of the Nile, the extent of the Victoria Nyanza and Tanganika Lakes, and the course of the Great River, supposed to be the Congo, which Livingstone and Cameron had seen at Nyangwè.

The undertaking was a gigantic one, requiring not only nerve, judgment, and great physical powers of endurance on the part of the explorer, but an aptitude for governing a body of men knowing nothing of discipline, and possessing in many cases the most impetuous and excitable tempers; skill in planning the best course out of a difficulty, and promptitude and resolution in carrying out the measures devised.

It is impossible to read Mr. Stanley's narrative without coming to the conclusion that he possessed all these qualities in an eminent degree; had it been otherwise he could never have accomplished what he did. More than this, in the preparation for his journey he displayed much prudence and forethought; and after reading the works of previous explorers in Africa, a retentive memory enabled him to profit largely by past experience of his own and others in the inhospitable wilds which he was to tread.

His design for a boat—or barge, as he calls it—in five water-tight sections, to enable its easier carriage overland on men's shoulders, proved invaluable. It seems certain after his experience of the native canoes which were quite unable to live in rough weather, and went down one after another with stores and guns (pp. 260, 261), that without the 'Lady Alice' he could never have circumnavigated the Victoria Nyanza and Tanganika Lakes.

To any but the most intrepid traveller the extent of these vast

inland seas, and the occasional height of their waves would be appalling; but neither this, nor the knowledge of the existence along the shores of hostile tribes who might, and who in fact did, obstruct their landing and prevent their procuring food, could deter the venturesome explorer and his followers from carrying out his bold design.

It must have been very cheering to the leader of the expedition to feel that, in the persons of the three Englishmen who accompanied him, Frederick Barker and the brothers Pocock (whose knowledge of boats and skill as watermen rendered their services invaluable), he had with him three stout hearts and three pairs of strong arms which would never desert him in the hour of need; and it must have been particularly trying to his feelings when, after many troubles shared together, many difficulties overcome, and many triumphs achieved, he saw one after another of them succumb, and die before his eyes.

The difficulties with which he had to contend, and the dangers which beset his path at every step, can only be appreciated from a careful perusal of his book. From the day he left Zanzibar, in November, 1874, with an expeditionary force of three hundred and fifty-six souls to provide for, his route towards the interior seemed one continual struggle for existence. Before he had been on the march a month desertions had been frequent (p. 98).

The rainy season began in earnest on December 23rd; and during an eight days' march the expedition struggled through one continuous downpour to Zingeh, the plain of which was half submerged by rushing yellow streams (p. 100). At Mtiwi, on January 2nd, 1875, after an hours' rainfall, six inches of water covered the camp, and a slow current ran southerly (p. 106). Fever, ophthalmia, and rheumatism supervened, but still they journeyed on; until in the vast bush-country, through which they struggled to reach Urimi, at the rate of ten miles in as many hours, the guide missed his way, and they were lost (p. 109).

Recovering the right road by well-nigh a miracle, starvation next stared them in the face. Supplies failed, no game could be found, and the party were reduced to an allowance of two cupfuls each of oatmeal gruel. Over thirty men were ailing: some suffered from dysentery; others from fever, asthma, chest disease, and heart-sickness; lungs were weak, and rheumatism had its victims (p. 114). On January 18th Edward Pocock died;

and by the 21st of that month the traveller's diary recorded twenty dead and eighty-nine deserted, between the coast and Vinyata!

The expedition was then little more than half-way between Zanzibar and the southern end of the Victoria Nyanza. Could anything be more discouraging? And yet this was nothing to the trials which were subsequently encountered in the circumnavigation of the lakes, and the journey to the west coast. It was bad enough to put up with hunger and desertion, and to stave off fever and death in the plains; but when to all this was added the risk of shipwreck, and the frequent attacks of hostile, treacherous, and even cannibal tribes, it seems marvellous that a man should undertake to lead an expedition farther, and that anyone should be found willing to follow him. But the stern purpose had been registered; the firm resolve taken to do, or die; and it would have been folly and weakness to have turned back, when half the journey was accomplished. So at least thought the leader of the expedition. The boat must be launched, the lakes explored, their extent determined, their outlets discovered, and the source of the Nile placed beyond doubt. The devious course of the great river which Livingstone and Cameron saw flowing past them at Nyangwè, the westernmost point of the Arab traders from Zanzibar, must be traced, before any idea could be entertained of a return to Europe.

All this was done, and more too. Following westward the course of the Congo, now identified with the Lualaba, and named the Livingstone River, in honour of the great traveller who preceded him, Mr. Stanley crossed nine hundred miles of previously unexplored country, encountering unheard of dangers, in the shape of malaria, cataracts, and man-eating savages, to say nothing of mutiny amongst his own disheartened followers, until at length, having traversed the vast continent of Africa from east to west, he arrived on the shores of the Atlantic. Safe and sound, it may be said, but, alas! how changed in health and appearance! In a portrait taken in England a week before his departure, and forming the frontispiece to the first volume of the present work, he appears a young man with dark hair, in good health, and with a careless expression of countenance which betokens no acquaintance with hardship. In the frontispiece to the second volume we have a portrait of the man as he appeared on his return three years later, aged and careworn, with his hair prematurely

grey. But he has lived to see the accomplishment of his fondest hopes and aspirations, and, in the acclamations of his fellow-men throughout the world, to reap the honour which is due to him. May he live to see all his observations verified, and his surmises confirmed.

From the description which is given of the court and character of the Emperor Mtesa, and of his readiness to embrace Christianity, it would seem that there is at length some encouragement to European enterprise to attempt opening the interior of a vast continent.

The important additions to our knowledge of African geography which have been made through Mr. Stanley's instrumentality will be best understood by examining successively the five maps which precede the first chapter in the first volume. Of these maps, which have been most carefully prepared, four show the routes of previous African travellers and the extent of their explorations; the fifth embodies the results of Mr. Stanley's last journey; while two much larger folding maps give, on a more extended scale, the details of his route in the eastern and western halves respectively of Equatorial Africa.

We say nothing of Mr. Stanley's researches in African Zoology, for we learn from the "Publishers' Note" prefixed to this work that in consequence of the size to which it has expanded, it has been found necessary to omit a large amount of valuable matter relating to the Hydrography, Ethnology and Natural History of Central Africa; and that this material, together with the account of Mr. Stanley's explorations of the Rufiji River, will be published in a supplementary volume during the ensuing autumn.

Of the Natural History, therefore, we shall hope to say something later. Meantime we have read enough to convince us that if Mr. Stanley has not thoroughly earned the title of "hero," we do not rightly apprehend the meaning of that word.

Riding Recollections. By G. J. WHYTE-MELVILLE. With Illustrations by EDGAR GIBERNE. Second Edition. 8vo. London: Chapman and Hall. 1878.

THE author of this volume gives us, at the outset, a clue to the general scope of its contents, when he dedicates it "on behalf of the bridled and saddled to the booted and spurred." The text, if

we may so call it, is characteristic of the author, not only in its neat terseness of expression, but still more in its spirit of kindly care for the animal that cannot speak for itself. True gentleness is the offspring, not of weakness, but of strength, and this it is that sets its stamp upon all that Major Whyte-Melville has written. It is apparent upon every page of every work of his. It is the hall-mark found only upon true gold—the mark of a kind and manly heart. His ‘Riding Recollections’ form no exception to the rule. Major Whyte-Melville’s horses are his friends, and he would have all who own horses treat them in the same spirit.

Full of anecdote, and of sound practical teaching, the book is a pleasant one to read, and though perhaps the choice of a bridle may be matter of opinion, there is little in the book that we should care to contradict. In his somewhat obvious dictum that “reins are intended for the guidance of a horse, and not for the support of his rider,” we cannot too strongly uphold him. It is true that this sort of teaching may be said to be indeed beginning at the beginning, but to how many could we not point who wilfully disregard it. Many a nasty fall might be traced to neglect of this first principle, and for this reason we are inclined to think that a loose rein at a leap, in spite of the many disadvantages enumerated by the author, is the safer course for the majority of men. Left to itself, the horse will clear it if it knows its business, and if it does not, a heavy pull at the bridle is not calculated to teach it.

From the use of the bridle, our author takes us to the abuse of the spur, and here again in one short pithy saying, he gives us the theme of a chapter. “No man,” he says, “should arm his heels with spurs until he is so good a rider as to be sure they shall not touch his horse.” In effect the Major would have every one win his spurs in the field, as in the days of chivalry he would have won his spurs of gold,—ornaments won by prowess to be worn with honour,—and perhaps in the main he is right. Few people know *how* to spur—fewer still know *when*. Still we are inclined to think that there are times when spurs are a necessity, particularly to a novice, who needs his heels in proportion as he lacks head and hands. More than one “cropper” have we known averted by a timely application of the steel, when nothing else would have availed.

Hand and seat, valour and discretion, have each a chapter to themselves, readable and valuable, in spite of the saying that an

ounce of practice is worth a pound of precept. Valour our author holds to consist of two parts, pluck and nerve, and the difference between them he illustrates with an anecdote, which we venture to repeat, at the risk of being deemed retailers of that class of story known as "fine old crusted."

"'You shiver, Colonel—you are afraid,' said an insubordinate Major, who ought to have been put under arrest then and there, to his commanding officer on the field of Prestonpans. 'I *am* afraid, sir,' answered the Colonel, 'and if you were as much afraid as I am you'd run away!'"

The Colonel, as we are told, had lots of "pluck," but, as he was honest enough to admit, a deficiency of "nerve."

Some critical notes on Irish hunters and thoroughbreds are followed by two chapters devoted respectively to riding *to fox-hounds* and riding *at stag-hounds*. But let not the reader think that it is in any jeering spirit the distinction is drawn. The latter is no less sport than the former, as Major Whyte-Melville has proved in his own experience, though to be sure he has sought it rather in pursuit of the perfectly wild animal over the moorlands of Somerset and North Devon than racing "the calf" in company with Her Majesty's Stag-hounds and a London crowd. How hard the work can be may be gathered from the sentence quoted from Lord Wolverton—"The worst of a deer is that you can't leave off when you like. Nobody will believe you if you swear it went to ground!"

We cannot conclude this notice without mention of the illustrations. The process of printing we believe to be that known as "autotype," but in this instance it can scarcely be called a success. There is a somewhat blurred and greasy appearance about the plates, which we feel to be unfortunate for much of Mr. Giberne's drawing. We say "much" advisedly, as we do not consider Mr. Giberne to be at all equal in his productions. The fall at the brook (p. 32), and the "flyer" (p. 242), are well and spiritedly drawn, but the enquiring-looking animal in "thrown out" (p. 193) we confess reminds us rather of the rocking-horse type, than of even the mildest horse to be found amongst the crowd at a suburban meet.

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NOTES FROM AN ARCTIC JOURNAL.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

(NATURALIST TO THE POLAR EXPEDITION, 1875-76).

DURING fifteen months that I spent within the Arctic Circle with the Polar Expedition of 1875-76, I kept a regular journal, which was daily entered, either in a note-book when travelling, or more fully when on board ship. It is not proposed to reprint this journal *in extenso*, but it is believed that extracts relating to the Botany, Zoology, and Geology of the voyage, if brought together in a consecutive form and sufficiently condensed, will interest the reader, without committing him to wade through the historical account of the Expedition. It is, however, with some diffidence that I have undertaken the task, because three separate works on the subject have recently appeared. In the first, Sir George Nares, the Commander of the Expedition, published a carefully compiled historical account of the voyage;* in the second, Capt. Markham, of the 'Alert,' has given a graphic account of his experiences and his journey over the ice of the Polar Sea;† whilst, thirdly, Dr. Moss, of the 'Alert,' has just published a magnificent volume,‡ containing a series of unrivalled Polar sketches, in which the reader is brought face to face with the scenery of the Arctic World. Many references to the Natural History of the region visited are scattered through the pages of these three works, whilst in a series of appendices to Sir George Nares' narrative, a

* 'Narrative of a Voyage to the Polar Sea in H.M. ships "Alert" and "Discovery."'

† 'The Great Frozen Sea.'

‡ 'Shores of the Polar Sea.'

condensed account of the salient features of the Natural-History Collections of the Expedition is recorded.

A mere enumeration of species procured, though valuable in a scientific point of view as affording a basis for the study of distribution, fails to convey to the reader any idea of the natural features of the country. In the following notes, therefore, the writer's endeavour has been not to weary the reader with a recapitulation of scientific names, but to bring to his mind's eye some slight idea of the physical aspect of the Polar zone; the paucity, yet interest, of its alpine flora; the extraordinary manner in which mammalian life is supported on a land apparently so barren that a casual observer would pronounce it absolutely desert; to draw some attention to the amount of invertebrate life in a sea just above the freezing-point; and to consider those startling changes which must have occurred in the history of our planet to have converted a sea, once crowded with reef-forming corals, to one on which now floats a perennial ice-cap.

The appointment of two gentlemen to accompany the Arctic Expedition of 1875-76 as naturalists, was based upon a recommendation of the President and Council of the Royal Society, which received the approval of the Lords Commissioners of Her Majesty's Treasury. Although these appointments interfered with the *personnel* of the Expedition as first decided on, yet the Lords Commissioners of the Admiralty, with the greatest liberality, modified the previous arrangement, and made provision for the reception on board of H.M. ships 'Alert' and 'Discovery' of two gentlemen to serve as naturalists, with the same pay, clothing, and emoluments as the lieutenants of the Expedition. In the first instance, the appointment of surgeon and naturalist to both vessels had been combined in persons eminently qualified for both duties, and it is not unnatural to suppose that it must have been a source of considerable disappointment to those gentlemen to find that the official means of carrying out their favourite studies as naturalists were transferred to others, not members of the naval profession. I have therefore the greater pleasure in recording how indebted I am to Dr. Edward L. Moss, surgeon of the 'Alert,' and Dr. Richard Coppinger, surgeon of the 'Discovery,' for their valuable and generous assistance during the voyage, and the liberal manner in which their collections were placed at my disposal on the return of the Expedition.

The Arctic Expedition, composed of H.M. ships 'Alert' and 'Discovery,' accompanied by the 'Valorous,' sailed from Portsmouth for Greenland on the 29th May, 1875, under the command of Captain G. S. Nares, R.N. A rough voyage across the Atlantic, in a small ship over-crowded with stores, afforded but few opportunities for researches in Natural History, whilst a cabin six feet by seven feet, containing clothes, appurtenances and outfit for a possible residence of three years within the Arctic Circle, was not conducive to the happiness or comfort of a landsman. Most of my time, in consequence, was passed on deck endeavouring to find a dry corner, when not at meals or sleeping. At times the weather moderated sufficiently to permit the use of the towing-net, when some of the Atlantic surface-fauna was brought on board, which, placed under the microscope, served to wile away an hour. A few species of sea-birds were observed between Ireland and Cape Farewell, and the observations on their habits, and dispersion over the Atlantic admit of the following notice.

On the 6th June, when 170 miles west of the coast of Galway and 360 miles south-west of St. Kilda,—the nearest known breeding station of the species,—Fulmars, *Fulmarus glacialis*, approached the ship, and remained constant attendants until entering the ice of Smith Sound, a distance of twenty-five degrees of latitude, or over 1500 miles. I have referred in a previous volume* to the peculiar distribution of the Fulmar in the Atlantic, namely, to the north of the fifty-third parallel, an observation first recorded by the late Professor Goodsir. That this bird should be extremely common in the Atlantic in the latitude of Ireland, whilst Thompson† considered it an extremely rare visitor to the same coast, is noteworthy. Its absence from the neighbourhood of the Shetland Islands during the breeding season, with its presence some thirty or forty miles to the northward, and its abundance around the Færoe Islands, where it has been a breeding species for the last forty years, are points in the natural history of this bird which require elucidation. Fulmars and Petrels are far closer attendants on a vessel during rough than smooth weather, the reason doubtless being that the marine organisms which compose their usual food sink to a stratum of undisturbed water when the surface-layer of the sea becomes agitated by storms. The blue variety of the Fulmar is apparently merely an immature stage of

* 'The Zoologist,' 1877, p. 470.

+ 'Nat. Hist. Ireland,' vol. iii., p. 406.

the same species. In the North Atlantic and Baffin Bay the blue and light varieties occur in the proportion of about one to ten; but I never saw a blue-plumaged bird captured, the light-coloured and more powerful birds buffeting the others from the bait.

Kittiwakes, *Rissa tridactyla*, all immature birds, followed the vessel in June some 150 miles from the Irish coast, and then left. As we approached within fifty miles of the shores of Greenland they again came round the ship. In autumn this species appears distributed over the entire North Atlantic; I observed them daily between Cape Farewell and Ireland.

In mid-Atlantic a single Arctic Tern, *Sterna macrura*, approached the ship during a gale of wind. It seemed tired, and settled on an empty cask which was thrown overboard.

In summer *Puffinus major* is abundant about the fifty-ninth parallel, off Cape Farewell, and has received from the whalers the name of "Cape Hen." A second and smaller species is equally common, which Mr. Dresser, from my description, surmises, no doubt correctly, to be *Puffinus griseus*. In autumn the range of the Greater Shearwater extends over the North Atlantic from the latitude of Cape Farewell to the coast of Kerry.

Small Petrels often followed in the track of the vessel, but as no example was captured I am not certain of the species. None were noticed to the northward of lat. 57°, two degrees to the south of Cape Farewell.

The Fulmars, Petrels and Gulls that follow a ship disperse and quit the wake of the vessel at nightfall. I frequently remained on deck during the middle watch to notice at what hour the sea-birds reappeared. The first to return were the small Petrels; some of these arrived with the glimpse of dawn, and might be seen hawking like Martins round the ship. Then a Fulmar or two came flying towards the vessel from different points of the compass, arriving in twos and threes until the usual assemblage had congregated in its wake. Sea-birds, according to my observation, do not follow a ship during the hours of darkness or in moonlight.

As we neared the coast of Greenland, in the latitude of Cape Desolation, we first encountered ice. It consisted of fragments of ancient floes, or ice formed on the surface of the sea by direct congelation. The term "floe" is applied by Arctic navigators to this description of ice. A "floe" may be miles in extent or only a few acres in size. The term "iceberg" or "berg" is applied

only to freshwater ice that has been formed on land and by the agency of glaciers thrust into the sea. When floes have been broken up into pieces of comparatively small size, the term "pack-ice" is applied to it. Pack-ice is designated loose or close pack according to the juxtaposition of its component pieces. In the vocabulary of the Arctic traveller these definitions are multiplied to a great extent by various designations applied to local conditions, or variations in the size, shape, or consistency of the ice-masses, all of which terms are of peculiar significance and value to the navigator in the frozen seas, but not to the general reader.

Throughout the stretch of nature I know of no sight more enchanting than that when steaming amidst ice, on a placid sea, surrounded with brilliant sunshine. Beautiful as are the colours in the tropics, they are equalled, if not surpassed, by the hues of the Arctic Seas. The pieces of ice which surrounded us were worn, fretted, and honeycombed by the continual motion of the warm sea-water, and had assumed the most extraordinary shapes. It required but little effort of the imagination to convert one fragment into the likeness of an immense bird; another into that of a bear, or an enormous coral, a house, a pillar, or indeed almost any object one's fancy dictated. The colours reflected from the ice were indeed lovely. In many pieces bright blues were the predominant shades, the tint on the edges of the masses above water being of a cerulean hue, deepening in intensity towards the centre, until, in the depths of a water-worn grotto, it rivalled the richest sapphirine-violet; the submerged portions of the ice appeared bright green through the setting of a dull green sea.

A few Looms, *Alca Brunnichi*, and Little Auks, *Mergulus alle*, enlivened the scene, whilst here and there Seals were stretching themselves most unconcernedly on the pieces of ice.

The position where this pack-ice is met with off Cape Farewell, being south of the parallel of sixty, or about that of Lerwick in the Shetland Islands, and Bergen in Norway, and over three degrees south of Trondhjem, is at the first glance so surprising that it is worth while devoting a short space to a consideration of the subject, and when we reflect how intimately connected is the existence of the present flora and fauna of Western Europe with the deflection of the East Greenland ice-stream around Cape Farewell to the American continent, it must be admitted that the subject is one deserving the attention of all persons professing to

be naturalists. Without entering into a discussion on ocean circulation, which would occupy too much space, we must, in the first instance, direct our thoughts to the equatorial regions of the Atlantic, where the prevailing and constant winds propel the warm water of the tropics against the long breakwater of the two Americas. Finding no loophole of escape in that direction, this mass of water naturally seeks an outlet towards the point of least resistance, which is across the North Atlantic, through the gap between Iceland and the north of Scotland, along the western coast of Norway, washing the shores of Spitsbergen, and finally entering the vast refrigerator of the Polar Basin. The influx of this enormous body of heated water necessitates a corresponding outflow of colder water, and we find that such exists, the main current passing south along the east coast of Greenland, bearing on its surface the decaying ice of the Polar floes. Sweeping around Cape Farewell, part of this current is deflected along the western shore of South Greenland, then joining with the southerly setting current of Baffin Bay and Smith Sound, the great mass of cold water, laden with icebergs, moves towards the shores of Newfoundland and Labrador and the coasts of New England.

Though somewhat of a digression, it is essential that the effects of the warm north-setting and the cold south-setting currents should be duly considered, otherwise no correct appreciation can be obtained of the Natural History of the Polar Regions; and when we reflect that the south-western shore of Spitsbergen, in the seventy-seventh parallel, is during the summer almost free from ice, whilst the east coast of Greenland, in the latitude of Bergen, is blockaded with drift-ice, and its glaciers protrude into the sea, it appears hardly necessary to invoke a change in the earth's axis to account for a glacial epoch having existed in Great Britain.

On the 28th June, a month after leaving Portsmouth, we sighted the coast of Greenland, somewhere about the vicinity of Cape Desolation, and for the next few days continued our course along its shores, keeping just outside of the drift-ice from the east coast. Whenever we neared the shore, Kittiwakes, Arctic Terns, and Iceland Gulls were numerous, and Seals were common on the drift-ice. In lat. 62° N. we observed a single Walrus. A Fulmar captured at this time had its stomach filled with the horny mandibles of a small cephalopod.

On one occasion we dredged, in thirty fathoms, on a bank lying

about lat. 65° N., off the district of Godtshaab. When the dredge was hauled on board it was half full of gravel and pebbles, no doubt left on the bank by the grounding and decaying icebergs: the majority of the pebbles brought up were gneiss and granite, more sparingly pieces of basalt. The swabs attached to the dredge were full of Asteroids and Ophiurians—*Asteracanthion polaris*, *Solaster endeca*, *Ophioglypha robusta*, *O. Sturwitzii*, and *Ophiopholis bellis* being represented in the haul. Inside of the net were six large Holothurians, *Cucumaria frondosa*, and a few Mollusca, chiefly *Buccinium*, *Natica*, *Astarte*, and *Saxicava*.

As a rule, we passed along the Greenland coast at too great a distance to obtain any accurate idea of its formation. All that we could observe was the peaked and ragged outline of the mountainous islands that fringe the mainland. At times, looking up some fiord, we caught a glimpse of the great *mer-de-glace* of the interior. On one or two occasions, as we neared the coast, under sail, we obtained better opportunities of gratifying our curiosity in regard to this most interesting land.* Early on the 4th July, the date on which the Arctic Circle was crossed, we ran in shore not far from Sukkertoppen. The superb colouring of an Arctic summer night was on this occasion displayed to its fullest extent. When the sun reached its lowest declination, the heavens were tinted gold and amber, and for a couple of hours we witnessed a glorious sunset passing into a still more brilliant sunrise. The mountains, previously shrouded in mist and gloom, completely changed their appearance; their snowy summits were suffused with a warm orange glow, deep purple shades climbed up the slopes, clothing each ravine and precipice with rich shades of colour, and hanging like a warm-tinted curtain across the valleys leading into the interior; beyond all, almost hidden in a veil of neutral tint, the line of the "inland ice" cut the horizon.

On this occasion a small whale, which I believe to have been the Common Beaked Whale, *Hyperoodon rostratus*, was blowing near the ship. Each emission of breath was accompanied by a stentorian grunt, which closely resembled that of the elephant. This small whale was accompanied by a flock of thirty or forty

* It being quite beyond the compass of these notes to attempt to do more than record personal experiences, the reader, if inclined to obtain an insight into the physical structure of Danish Greenland, must consult the works of the standard authorities on the subject, namely, those of Dr. Rink and Dr. Robert Brown.

Kittiwakes, who settled in its wake, and whenever the animal disturbed the water in its ascent or descent these birds flocked to the spot, and were busily employed in feeding.* Doubtless the agitation of the water brought the fish to the surface.

On the 5th July we were off Rifkol Island, in the district of Egedesminde, the high land of the island of Disco coming in view. During the last century this portion of Davis Strait afforded a lucrative fishing-ground for the true whale, *Balæna mysticetus*. The *mysticetus* is now a comparatively scarce visitor to those shores, the and fishery has declined so greatly that only from the settlement of Holstenberg do the Greenlanders now-a-days continue the pursuit, and during a long period it has averaged but one "fish" each season. The ice-quarter-masters on board our vessels being experienced whalers from the Scotch ports, and having "fished" for many years in the Greenland Sea, Davis Strait, Baffin Sea, and to the west of Lancaster Sound, gave me much interesting information in regard to the natural history of the true whale. Like most of the Cetacea, as far as has been observed, these animals couple in an upright position. One of our ice-quartermasters assured me that he once observed a pair of true whales in this position with their tails only above water. Captain Markham informed me that when in pursuit of Narwhals in Lancaster Sound a pair were observed in an upright position. On striking the female, which was secured, the harpoon passed into the male, which finally made good his escape, though severely wounded.

Early in the morning of the 6th July we made the south-west of Disco Island under sail. Then we steamed along its southern shore, passing under the lofty mural cliffs of Uvfak; its basalt beds appeared very horizontal, and the general appearance of the cliffs greatly reminded me of the Færoe Islands. Hundreds of icebergs, chiefly discharged from Jakobshavn ice-fiord, were scattered over the surface of Disco Bay. It was a scene of great beauty: an unclouded sky, a perfectly smooth sea, with the strange surroundings of the enormous icebergs. Animal life was not wanting, hundreds of Iceland Gulls and Fulmars perched on the bergs, flocks of Common and King Eiders flew past us every few minutes, whilst Black Guillemots, the "dovekie" of Arctic navigators, paddled away from the approaching ship.

(To be continued.)

REPORT OF THE CLOSE-TIME COMMITTEE OF THE BRITISH ASSOCIATION, DUBLIN, 1878.

[The following Report has been presented to the British Association by the Close-Time Committee.]

It is with regret that your Committee has to report that, for the first time since its original appointment in August, 1868, the work it has not unsuccessfully had in hand has been brought in question, and this in a way which requires serious attention on the part of all who wish to preserve our indigenous animals from the extermination that, until the last few years, was threatening so many of them.

In July, 1877, it having been reported to Her Majesty's Secretary of State for the Home Department that "the herring fishery on the coast of Scotland is in an unsatisfactory state, and that it is desirable that inquiries should be made to ascertain whether any legislative regulations would tend to promote the welfare of the fishermen engaged in the said fishery, and to increase the supply of herrings for the benefit of the public," that gentleman appointed Mr. Buckland, Mr. Spencer Walpole, and Mr. Archibald Young to be Commissioners to make such inquiries and to report to him the result thereof.

In accordance therewith, the Commissioners above-named reported to the Home Secretary, under date March 1, 1878, and their 'Report,' with 'Appendices,' was subsequently presented to both Houses of Parliament by command of Her Majesty.

This 'Report,' containing certain conclusions arrived at by the Commissioners, naturally attracted the notice of your Committee, and, after due consideration, it was resolved that a letter should be addressed on behalf of your Committee to the Home Secretary in regard to some of those conclusions.

The following is a copy of the letter thereupon sent:—

"To the Right Honourable R. A. Cross, H.M. Principal Secretary of State for the Home Department.

6, Tenterden Street, Hanover Square, W., London, July 6, 1878:

"SIR,—The Committee of the British Association for the Advancement of Science, appointed for the purpose of inquiring into the possibility of establishing a close time for indigenous animals, having had under their consideration the Report on the Herring Fisheries of Scotland, dated 1st March, 1878, and the conclusions at which the Commissioners have

arrived (pp. 35 and 36 of that Report), beg leave respectfully to submit to your consideration the following observations, *viz.* :—

“I. That conclusions Nos. 2 and 3 of the Commissioners, *viz.*, that ‘Legislation in past periods has had no appreciable effect,’ and that ‘Nothing that man has yet done, and nothing that man is likely to do, has diminished, or is likely to diminish, the general stock of herrings in the sea,’ if correct, are absolutely contradicted by conclusion No. 13, which recommends that ‘The Sea-Birds Preservation Act, protecting Gannets and other predacious birds which cause a vast annual destruction of herrings, should be repealed in so far as it applies to Scotland.’

“II. That conclusion No. 1, stating that ‘The herring fishery on the coast of Scotland as a whole has increased and is increasing,’ clearly shows that there can be no necessity for the step recommended in conclusion No. 13 as above cited.

“III. That conclusion No. 13 seems to have been arrived at from exaggerated or incorrect information, as will appear from the following considerations:—The number of Gannets on Ailsa is estimated (Report, p. xi.) at 10,000, and a yearly consumption of 21,600,000 herrings is assigned to them; while the Commissioners assume that there are ‘fifty Gannets in the rest of Scotland for every one on Ailsa,’ and on that assumption declare that the total destruction of herrings by Scottish Gannets is more than 1,110,000,000 per annum. This is evidently a miscalculation; for, on the premisses, this last number should be 1,101,600,000, a difference of more than eight millions.

“But, more than this, supposing the figures at the outset are right, it appears to the Close-Time Committee that the succeeding assumption of the Commissioners must be altogether wrong; at any rate, there is no evidence adduced in its support, and some that is contradictory of it.

“The number of breeding places of the Gannet in the Scottish seas has long been known to be five only, as indeed is admitted by one of the Commissioners (Appendix No. 2, p. 171); and the evidence of Captain M'Donald, which is quoted in a note to the same passage, while estimating the Ailsa Gannets at 12,000 in 1869 (not 1859 as printed), puts the whole number of Scottish Gannets at 324,000 instead of 510,000, which there would be at the rate of fifty in the rest of Scotland for one on Ailsa, according to the Commissioners' assumption.

“Moreover, 50,000 of these 324,000 birds, or nearly one-sixth, are admitted by this same Commissioner to be ‘of great value to the inhabitants’ of St. Kilda, and indeed they are of far greater value to them than any number of herrings, since it is perfectly well known that the people of St. Kilda could hardly live without their birds; therefore, this 50,000 must be omitted from any estimate of detriment. Deducting, then, 50,000 from Capt. M'Donald's 324,000, we have 274,000, and these, at the Com-

missioners' estimate, would consume 600,000,000 herrings, instead of the 1,110,000,000 alleged by the Report, and, therefore, nearly two hundred millions fewer than the Commissioners' estimate of the annual take of the Scottish fisheries (800 millions)—twenty-five per cent. less instead of thirty-seven per cent. more.

“Hitherto the supposition of the Report, that the Gannets frequent the Scottish seas all the year round, has been followed; but the Close-Time Committee begs leave to observe that, as a matter of fact, these birds are not there in force for more than half the year.

“This, then, will require another abatement to be made. Not to exaggerate the case, the Committee assumes them to frequent these waters seven months or seven-twelfths of a year. This will make their annual capture of herrings 350,350,000, instead of the more than 1,110,000,000 of the Commissioners, being 700,000,000, or much less than one-third, fewer.

“IV. That in all the evidence received and published by the Commissioners only two witnesses allege that any harm has resulted to the fisheries from the Sea-Birds Protection Act. Of these the first, Robert M'Connell, presented a petition from the fishermen of Girvan, in which it is stated (p. 145) that ‘no legislation is called for or required;’ while another witness from the same place, John Melville (a fishery officer), declares (at p. 146) that ‘The fishery has very much increased this last year. Recent years have also shown a gradual increase. The increase is partly due to the increased machinery, and partly to the increase in the number of herrings.’

“The second witness unfavourable to the Act, John M'William (an Inspector of Poor), speaks (pp. 147–49) only from a personal knowledge acquired between 1833 and 1853, when he ceased to be a fisherman, and not from any recent experience. He can therefore scarcely be held competent to give an opinion of his own as to whether the Sea-Birds Protection Act (passed in 1869) has injured the fisheries. Another witness recommends the repeal of this Act; but he, Hugh MacLachlan, expressly states (p. 143) that he ‘thinks the cause of the decrease [in the numbers of herrings taken] is the catching immature fish;’ and the remedy he proposes is the adoption of a strict close time.

“V. That, on the other hand, the utility of sea-birds in pointing out the situation of shoals of herrings and other fish is not only generally notorious, but is even admitted in the Report (pp. 57 and 175).

“VI. That if the Sea-Birds Act be repealed on the grounds alleged for Scotland, its repeal for England and Ireland must logically follow; and this Committee trusts that no step may be taken to repeal the Act for Scotland.

“I am, Sir, yours obediently,

“H. E. DRESSER,

Sec. to the Brit. Assoc. Close-Time Committee.”

To this letter the following reply has been received:—

Whitehall, July 12, 1878.

"SIR,—I am directed by the Secretary of State to acknowledge the receipt of your letter of the 6th inst., submitting observations on behalf of the Committee of the British Association for the Advancement of Science on the Report of the Commissioners appointed to inquire into the herring fisheries of Scotland, dated the 1st March last.

"I am, Sir, your obedient servant,

(Signed)

GODFREY LUSHINGTON.

"H. E. Dresser, Esq.,

6, Tenterden Street, Hanover Square, W."

Your Committee conceives that the points at issue between it and the Scottish Herring Fishery Commissioners are thus fairly stated, and is confident that all unbiassed persons will admit that those Commissioners have overstated their case. Your Committee would further remark that, though the Sea-Birds Preservation Act contains a provision (in section 3) for varying the close time therein enacted on due application, no such application appears ever to have been made on the ground of detriment to the herring fisheries caused by sea-birds; while there can be no reasonable doubt that any application for shortening the close time on that ground, if duly made, would be granted—circumstances which would seem to show that the conclusions of the Commissioners were not generally shared by those interested in the fisheries. On the other hand, your Committee may refer to the fact, already mentioned in former Reports, that several applications have been made for prolonging the existence of the close time.

With regard to the Wildfowl Preservation Act, your Committee has to report that the discontent caused by its establishing a close time different from that which was originally proposed by your Committee still exists in some quarters, but that the power of variation the Act contains has been put in force in many counties; and your Committee trusts that when this power has been still further exercised, as it doubtless will be, and the Act practically brought into accordance with your Committee's first proposal, of which there are many indications, dissatisfaction will be reduced to a *minimum*, or will altogether cease.

A Bill for the Protection of Freshwater Fish has been introduced into Parliament during the present session, and will doubtless

receive the royal assent. It has not, however, been of a kind that needed any action on the part of your Committee.

In view of any proceedings which may be taken in the session of 1879 in regard to the recommendations of the Scottish Herring Fishery Commissioners already recited, as well as on general grounds, your Committee respectfully urges its reappointment.



THE MAMMALS OF SHAKSPEARE.

BY HENRY REEKS, F.L.S., F.Z.S.

(Concluded from p. 249.)

THE RHINOCEROS, *Rhinoceros* ———.

Once only does Shakspeare mention the Rhinoceros, and then apparently only for the purpose of illustrating a most formidable opponent, for Macbeth, speaking to the ghost of Banquo, exclaims—

“ What man dare, I dare :
Approach thou like the rugged Russian bear,
The arm'd *rhinoceros*, or the Hyrcan tiger ;
Take any shape but that, and my firm nerves
Shall never tremble.”

Macbeth. Act iii., Scene 4.

THE WILD BOAR, *Sus scrofa*.

Until the extinction of the wild boar in Britain, probably during the seventeenth century, boar-hunting was considered royal sport. From the spirited descriptions given by Shakspeare (who mentions the wild boar upwards of thirty times), it would appear that the poet had himself joined in the chase:—

“ ‘ Thou hadst been gone,’ quoth she, ‘ sweet boy, ’ere this,
But that thou told’st me thou would’st hunt the *boar*.
O be advis’d; thou know’st not what it is
With javelin’s point a churlish swine to gore,
Whose tushes never sheathed he whetteth still,
Like to a mortal butcher bent to kill.’ ”

Venus and Adonis. Stanza 103.

The flesh of wild boars was considered a great delicacy, and, from the difficulty of procuring it, an expensive dish. Can we

wonder, then, at the astonishment of Mecænas, when informed of the sumptuous manner in which Cæsar was entertained by the Queen of Sheba? Well may he repeat the query—

“Eight *wild boars* roasted whole at a breakfast, and but twelve persons there: is this true?”

Antony and Cleopatra. Act ii., Scene 2.

A favourite West Indian dish is a wild boar “barbecue’d,” *i.e.* roasted whole, stuffed with spice, and basted with wine—generally Madeira! Pope thus describes a glutton that had ruined himself by indulging in such expensive luxuries:—

“Oldfield, with more than harpy throat endue’d,
Cries, ‘Send me, ye gods, a whole hog barbecue’d.’”

THE CAMEL, *Camelus arabicus*.

The Camel is mentioned some half-dozen times. In *Richard II.*, Act v., Scene 5; *Troilus and Cressida*, Act i., Scene 2.

THE STAG, *Cervus elaphus*.

THE FALLOW DEER, *Dama vulgaris*.

THE ROEBUCK, *Capreolus capræa*.

Deer-hunting is repeatedly mentioned by Shakspeare, who, had he not been a thorough sportsman himself, could not have been better informed of the terms used in venery.

FALSTAFF. “Divide me like a bribed buck, each a haunch; I will keep my sides to myself, my shoulders for the fellow of this walk, and my horns I bequeath to your husbands.”—*Merry Wives of Windsor*, Act v., Scene 5.

I have quoted the above in preference to innumerable other references, for the purpose of ascertaining the derivation of the word “bribed” as applied to the quartering of a buck. I have consulted some few works which are at hand, such as Osbaldiston’s ‘Sportsman’s Dictionary,’ Sullivan’s ‘Dictionary of Derivations,’ &c., but can find no allusion to the word used in that sense. Perhaps the readers of ‘The Zoologist’ will kindly help me.

THE BISON, *Bison* ———.

Occurs only once, and then as an adjective (*Coriolanus*, Act ii., Scene 1). The Bison, which was once very common in many parts of Europe, is now, according to Mr. A. R. Wallace, confined to limited areas in Poland and the Caucasus; whether it occurs south

of the latter range of mountains—*i. e.* in the Mediterranean sub-region—I am unable to say.

THE ELEPHANT, *Elephas* ———.

The Elephant is mentioned three times in *Troilus and Cressida* as an adjective or epithet, and once in *Julius Cæsar*, Act ii., Scene 1.

ULYSSES. “The *elephant* hath joints, but none for courtesy : his legs are legs for necessity, not for flexure.”—*Troilus and Cressida*, Act ii., Scene 3.

THE RAT, *Mus rattus*.

In all probability the only rat known to Shakspeare was the old English Black Rat, now nearly if not quite extinct. It is frequently alluded to in the plays. King Lear pathetically exclaims :—

“Why should a dog, a horse, a *rat*, have life,
And thou no breath at all?”

King Lear. Act v., Scene 3.

THE MOUSE, *Mus musculus*.

The Common Mouse and Field Mice are repeatedly mentioned by Shakspeare.

“Look, look, a *mouse* !

Peace, peace ;—this piece of toasted cheese will do 't.”

King Lear. Act iv., Scene 6.

THE DORMOUSE, *Mus avellanarius*,

Occurs only once, as an adjective—*viz.* in *Twelfth Night*, Act iii., Scene 2—

FABIAN. “She did show favour to the youth in your sight only to exasperate you, to awake your *dormouse* courage, to put fire in your heart, and brimstone in your liver.”

THE SQUIRREL, *Sciurus europæus*.

Titana says :—

“I have a venturous fairy that shall seek

The *squirrel's* hoard, and fetch thee new nuts.”

Mercutio, speaking of the fairy Queen Mab, describes—

“Her chariot is an empty hazel-nut
Made by the joiner *squirrel*.”

THE PORCUPINE, *Hystrix cristata*.

In *Hamlet*, Act i., Scene 5, occurs the oft-quoted line—

“Like quills upon the fretful *porcupine*.”

The Duke of York, speaking of the rebel Jack Cade, remarks—

“In Ireland have I seen this stubborn Cade
Oppose himself against a troop of Kernes;
And fought so long, till that his thighs with darts
Were almost like a sharp-quill'd *porcupine*.”

THE HARE, *Lepus timidus*.

Even in Shakspeare's day coursing appears to have been a popular amusement. In the amusing farce with the drunken tinker, a servant asks—

“Say thou wilt course: thy greyhounds are as swift
As breathèd stags, ay, fleetier than the roe.”

Taming of the Shrew. Induction, Scene 2.

“If I fly, Marcius,
Halloo me like a *hare*.”

Coriolanus. Act i., Scene 8.

THE RABBIT, *Lepus cuniculus*.

With our mischievous little friend the Rabbit we conclude our notes on “The Mammals of Shakspeare,” merely quoting a remark of the much-abused but amusing Falstaff—

“Depose me? if thou dost it half so gravely, so majestically, both in word and matter, hang me up by the heels for a *rabbit-sucker*.”

Henry IV. Part I., Act ii., Scene 4.

In the foregoing brief notes mention has been made of forty-one animals—*fere naturæ*. The allusions made to them by Shakspeare, although in many cases almost trivial in their nature, exhibit nevertheless an acquaintance with many peculiarities of haunt and habit which, as regards the indigenous animals, could only have been acquired by close observation in the woods and fields. In regard to the species which he would not be likely to meet with in this country, reading and memory evidently served him in good stead.

PROVINCIAL NAMES OF BRITISH ANIMALS.

Scotland.—On looking through the lists of provincial names of animals given for various counties of England in the last number of 'The Zoologist' (pp. 287—292), it occurred to me that a comparison with Scotch local names might prove of interest. I am preparing county lists of local names in Scotland with a view to publication, and for purposes of comparison, and in an article—which is almost ready for press—upon the Natural-History notes in the 'Old Statistical Account of Scotland,' I have noticed the older Scotch names of quadrupeds and birds therein given. Meanwhile I will give such of the provincial names mentioned in the last number of 'The Zoologist' as are in use in Scotland:—

Badger. *Brock.*

This name is still used, but only very locally. It is to be found, however, constantly appearing in the names of places in Scotland where the animal was at one time more abundant than it is now. Thus, "Broc-lán" (*i. e.* full of badgers), the name of a farm in Perthshire.*

Fieldfare. *Storm-bird.*

In many parts of Scotland this name, or "Storm-cock," is applied to the Missel Thrush; but it has doubtless originated in error, as we also find in Scotland that the term "Felti" or "Feltiflyer" is applied in like manner to both species. The first appearance of Fieldfares in Scotland is held to predict a storm; whence the name, which has come to be applied also to the Missel Thrush.

Redstart. The name "Fire-tail" is also applied in Stirlingshire.

Stonechat. *Stone-chuck.*

Our form is "Stonechacker" or "Stonechatter"; but this name is more generally applied in Scotland to the Wheatear.

Nightjar. *Night-hawk.*

This name is also in common use in Scotland.

Lapwing. *Pee-weep.*

Our form is "Peesweep."

Oystercatcher. *Sea-pie* or *Sea-piet.*

Whimbrel. *May-bird.*

This name is universally applied throughout the Long Island or Outer Hebrides, and in many other parts of the West of Scotland.

Common Sandpiper. *Summer Snipe.*

The name "Summer Snipe" is applied in Scotland usually to the Common Sandpiper, as is also another less elegant epithet, descriptive of a well-known habit usually observable when the bird, on being suddenly disturbed, takes flight.

Gull. *Maw*; *Sea Maw.*

The Glaucous Gull is "Golden Maw."

Song Thrush. *Mavie* in Scotland.

Greenfinch. *Green Lintie.*

Dipper. *Water Crow.*

Goldfinch. *Flinch.*

In Scotland "Goldfinch." I do not know of any other finches in Scotland, except the Bullfinch, which has an *l* inserted in the local name, as above.

Rook. *Craw* universally in South and central districts of Scotland.

Ring Dove or "Cushat." *Cushie* or *Cushie-doo* in Scotland.

* 'Old Statistical Account of Scotland,' vol. xi. (1794), p. 615.

Lapwing. *Tuet*.

In Fife and Forfar an almost similar name—viz. "Tūchet" (pronounced "Tyuchet")—is applied to this species.

Heron. *Crane* in Scotland.

Blackbird. *Blackie* and *Blackie-bird* in Scotland.

Bulfinch. *Bullie*.

This name is applied here to the Bulfinch, and not to the Chaffinch as in Yorkshire (p. 292).

Whitethroat. *Nettle-creeper*.

I have heard this name applied in Midlothian, but cannot feel sure whether it was by a native.

In the preparation of my county lists of local names in Scotland I shall be glad of any assistance from brother naturalists.—J. A. HARVIE BROWN (Dunipace House, Larbert, N. B.).

Yorkshire.—In the district of Cleveland, more especially in the Dales, twelve miles west of Whitby, ten east of Stokesley, and nine south-east of Guisborough, the following names are in use:—

Stoat. *Clubster*.

Weasel. *Ressela* or *Rezzela*.

Shrew. *Blead-mouse*.

Badger. *Brock* (disused).

Bat. *Flitter-mouse*; *Back-bearaway*.

Rat. *Ratton*.

Barn Owl. *Church Owl*.

Brown Owl. *Hoot Owl*; *Wood Owl*.

Missel Thrush. *May Thrush*.

Song Thrush. *Throstle*.

Fieldfare. *Felfer*.

Blackbird. *Black Uzzel*.

Ring Ouzel. *Ring Uzzel*; *Moor Blackbird*.

Water Ouzel. *Dipper*.

Redstart. *Fire-tail*; *Red-tail*.

Stonechat. *Stone-chack*; *Stone-chacker*.

Whinchat. *Whinchacker*.

Willow Wren. *Mealy-mouth*.

Common Wren. *Tom Tit*.

Blue Tit. *Jenny Wren*.

Pied Wagtail. *Dish-washer*.

Reed Bunting. *Blackcap*.

Chaffinch. *Bull-spink*.

Yellowhammer. *Goldie*.

Greenfinch. *Green Linnet*.

Hooded Crow. *Dun Crow*; *Norway Crow*.

Carriion Crow. *Ger-crow*; *Doup*.

Rook. *Craw*; *Saddleback*.

Magpie. *Nanpie*.

Starling. *Shep-starling*; *Shepstare*.

Swift. *Devil-shrieker*.

Sand Martin. *Bank Swallow*.

Martin. *Eaves* or *Easin Swallow*.

Ring Dove. *Cooscot*; *Cushat*.

Lapwing. *Peewit*; *Tufit* (pronounced "Teeafit").

Heron. *Hernseu*; *Crane*.

Titlark. *Moor-titling*; *Moor-tahling*.

Corn Crake. *Craker*.

Hedgesparrow. *Cuddy*; *Shufflewings*.

Sandpiper. *Summer Snipe*.

Newt. *Ask*; *Esk*; *Hask*.

Viper. *Hagworm*.

Snake. *Grass Snake*.

Toad. *Tade*.

Dragon-fly. *Fleeing Ask* or *Esk*; *Fleeing Aither*, *Edder*, or *Nedder*.

Blue-bottle Fly. *Flesh-fly*.

Black-beetle. *Black-clock*.

Water-beetle. *Water-clock*.

Ladybird. *Lady-clock*.

Back-bearaway. The first part of this name is the Old English *Bakke* met with in Prompt. Parv.; *c.f.* Old Swedish *Natt-backa*; Danish *Aften-bakke*. The "bearaway" I cannot explain.

Clubster. Compare the Lancashire "clubtail."*

* It is probable that the Norfolk "lobster," mentioned in Mr. Gurney's list (p. 287), is a corruption of "clubster."—ED.

Mealy-mouth and the interchange of the names for the Common Wren and Tomtit are curious, and do not admit of any easily-found explanation.

Tuft for the Peewit or Lapwing deserves comparison with the Danish *Tyvit*. I believe the words are coincident. The form "teeafit" is merely the result of vernacular pronunciation, analogous to "scheel" for school, "feel" for fool, &c. In the same way, I believe, "tahling" or "tarling," in the name for the Titlark, is merely the slurred pronunciation of "Titling."

Cuddy. Why the Hedgesparrow and the donkey should both be rechristened after St. Cuthbert is hard to say; but so it is. The name "shufflewings" speaks for itself.

Ask or *esk* is due to what in its Gaelic form is *asc*; *c.f.* Anglo-Saxon *athexe*; German *eidechse*. "Fleeing-ask," bearing in mind that many still hold the newt—and the dragonfly, too—to be venomous, explains itself. "Fleeing-nedder" or "ether" is simply "flying-adder," and equally explains itself.

Hagworm is the Cleveland form of Danish *Hugorm*; Swedish *Huggorm*; Old Norwegian *Höggormv*; the snake that strikes or wounds.

Clock for beetle is Old Norwegian, and may be compared with Old German *Chuleich*.—J. C. ATKINSON (Danby, Yarm).

Yorkshire, West Riding.—The following are some of the local names used for birds in this part of the West Riding of Yorkshire.—G. T. PORRITT (Highroyd House, Huddersfield).

Kestrel. <i>Standhawk</i> .	Meadow Pipit. <i>Titlark</i> .
Missel Thrush. <i>Storm-cock</i> .	Yellowhammer. <i>Yoldring</i> .
Fieldfare. <i>Felfer</i> .	Chaffinch. <i>Spink</i> .
Song Thrush. <i>Throstle</i> .	Greenfinch. <i>Green Linnet</i> .
Hedgesparrow. <i>Dunnock</i> .	Common Linnet. <i>Brown, Red, or</i>
Sedge Warbler. <i>Willow Wren</i> .	<i>Grey Linnet</i> .
Garden Warbler and Whitethroat.	Lesser Redpoll. <i>Chevy or Red Linnet</i> .
<i>Small-straw</i> .	Starling. <i>Shepster</i> .
Willow Warbler. <i>Peggy and Feather-</i>	Rook. <i>Crow</i> .
<i>poke</i> .	Maggie. <i>Pianet</i> .
These names also apply to the	Wren. <i>Jenny Wren</i> .
Chiffchaff.	Martin. <i>Swallow</i> .
Great Tit. <i>Oxeye and Blackcap</i> .	Lapwing. <i>Peewit</i> .
Blue Tit. <i>Tomtit and Bluecap</i> .	Landrail. <i>Corn-crake or Grass-drake</i> .
Long-tailed Tit. <i>Bottle Tit</i> .	Moorhen. <i>Waterhen</i> .

Lancashire.—I have noted the following list of names as being in use in this part of Lancashire:—

Thrush. *Throstle*; *Maris*.

The latter term is rare.

Fieldfare. *Felfar*; *Blueback*.

The Missel Thrush seems to be usually confounded with this bird, but is sometimes designated as "Chercock."

Hedgesparrow. *Dykie* or *Dykie-sparrow*.

Whinchat. *Whincheck*.

Wheatear. *Stonecheck*.

Wren. *Chitty*.

Meadow Pipit. *Titlark*.

Chaffinch. *Spink*.

Goldfinch. *Flinch*.

Linnet. *Grey Linnet*.

Greenfinch. *Green Linnet*.

Yellowhammer. *Bessie*.

Starling. *Shepster*.

Crow and Rook. *Craw*.

Magpie. *Piet*; *Maggie*.

Swift. *Devilin*.

Nightjar. *Night-hawk*.

Lapwing. *Tenit*.

Ringed Plover. *Grundling*.

Oystercatcher. *Sea-pie*.

Sandpiper. *Dicky-di-dee*.

Dunlin. *Sea-mouse*.

Heron. *Crane*.

Sheldrake. *Shellduck*.

Wild Duck. *Grey Duck*.

Scoter. *Douker*.

Tern (including Common, Arctic and Sandwich). *Sparling*.

Lesser Tern. The eggs and young of this species are invariably alluded to by the natives as those of "Sea-mice." The bird itself is included under the head of "Sparling."

Gull. *Sea Maw*.

This term seems to be applied to all species, but more especially to the Black-headed Gull, which abounds in this neighbourhood.

Cormorant. *Scarth*.

Some of these names, to which I have previously alluded, in 'The Zoologist' for July, 1877, are, I believe, peculiar to Walney Island. The mixed nature of the population—being chiefly composed of immigrants from other parts—in this locality renders it a somewhat difficult task to decide what are really the native names of the various birds. I can safely say, however, that all the terms given above are employed to a greater or lesser extent, and would probably be understood by the country people in the neighbourhood, to whom the ordinary English name would be unknown.—
W. ARTHUR DURNFORD (Barrow-in-Furness, Lancashire).

North Lancashire.—The following local names are in ordinary use here.—EDWARD T. BALDWIN (Woodcroft, Ulverston).

Thrush. *Throstle*.

Starling. *Shepster*.

Heron. *Crane*.

Lapwing. *Tewit*.

Scoter. *Douker*.

Oystercatcher. *Sea-pie*.

Tern. *Sea Swallow*.

Fieldfare. *Felfar*.

Mole. *Moudiwarp*.

Polecat. *Foumart*.

Marten. *Sweet Mart* or *Mart*.

Common Snake. *Hag-worm*.

Wasp. *Waup*.

Essex.—I have met with the following local names for birds when wildfowl shooting at Leigh, Essex.—A. H. SMEE (7, Finsbury Circus).

Godwit. *Prine*.
Oystercatcher. *Olive*.
Knot. *Male*.
Scaup and Pochard. *Dunbird*.
Redshank. *Tuke*.
Dunlin. *Oxbird*.

Brent Goose. *Black Goose*.
Bernicle Goose. *Bar-goose*.
Sheldrake. *Bar-gander*.
Black-backed Gull. *Saddle-back*.
Scoter. *Black Duck*.
Gadwall. *Sand Wigeon*.

West Cornwall.—I add the local names of some of our mammals, birds, &c., in West Cornwall:—

Badger. *The Grey*.*
Mole. *Wunt* or *Want*.
Short-eared Owl. *Woodcock Owl*.
Around Dartmoor, in Devonshire,
the "Red Owl."
Missel Thrush. *Home-screech*.
Song Thrush. *Grey-bird*.
Fieldfare. *Blue-bird*.
Redwing. *Winnard*.
Wheatear. *Wittol*; *Whitass*.†
Starling. *Stare*.
Hedgesparrow. *Spawe*.
The Tits (all except the Long-tailed
Tit). *Pridden-prál*.‡
On Dartmoor these birds are called
"Heckymals."
Yellowhammer. *Gladly*.
Pied Wagtail. *Water Wagtail*; *Dish-
washer*; *Dish-lick*.

Chaffinch. *Copperfinch*.
Bulfinch. *Hoop* (very rare).
Kestrel. *Windhover*.
Nightjar. *Dorhawk*; *Goatsucker*,
Night-hawk.
Jay. *Jay-pie* (rare).
Lapwing. *Peevit*.
Hooded Crow. *Marazion* (or *Market
Jew*) *Crow*.
Oystercatcher. *Sea-pie*; *Sea Magpie*.
Little Grebe. *Dabchick*.
Guillemot. Is, I believe, *The Murre*.
Lizards and Newts. *Padzypows*.§
Small Frogs. *Quilkin*.
Blindworm. *Long-cripple*.
On Dartmoor the Common Snake
is the "Long-cripple," and the
large Dragonfly is the "Long-
cripple's Horse."

Insects, crustaceans, and fish open a wide field in this direction of local names. Of the snails the shelled ones are with us "Jeanyakes" (an old Cornish name which has survived, but with

* There is a large family or little clan of people in this neighbourhood whose nickname is "Badger." They are a pugnacious lot, and will never themselves use this word "grey," nor permit it to be used with impunity in their presence. If they want to express the colour grey they use the word "blue."

† These two names suggest a derivation of the word "Wheatear." The bird takes its name from its white rump (*White-tail* = *Wittol*), and hence the second name above given, softened into *Whitear* or *Wheatear*.

‡ Old Cornish, which translated literally means "Tree Babbler."

§ From *pedzhar* or *peskwar*, old Cornish for "four," and *pow*, old Cornish for "foot."

a lost derivation), and the unshelled are “Malwidzharns,” said to mean the naked garden thief. “Dzharn,” of course, is garden, but I cannot make out the “Malwi.” It is not, however, improbable that it is of the oldest of Old Cornish, at which our dictionaries do not much help us.—THOMAS CORNISH (Prussia Cove, Marazion, Penzance).

Bucks and Berks.—I have heard the following local names of animals used in the Thames Valley, on the borders of Bucks and Berks:—

Bat. The larger species, *Rat-bat*; the smaller, *Mouse-bat*.

Sparrowhawk. *Blue-hawk*.

By this term the Sparrowhawk is probably always meant about here, though in Scotland the term is, I believe, generally applied to Harriers.

Fieldfare. *Pigeon Felt*.

Thrush. *Thrusher*.

Wagtail. *Dish-washer*.

Long-tailed Tit. *Bottle-tit*.

Swift. *Devil*.

Heron. *Moll-heron*.

Sandpiper. *Summer Snipe*.

Little Grebe. *Dabchick*; *Dabber*.

Tern. *Sea-swallow*.

Wryneck. *Cuckoo's Mate*; *Nile-bird*.

About two springs ago I was told by one of our garden labourers that he had that morning seen a “Nile-bird” about in the garden, which a little cross-examination proved to be the “Cuckoo's Mate,” but whether the term is in common use locally I do not know.

Newt. *Effett*.

Lizard. *Land Effett*.

Bleak. *Taylor*.

Miller's-thumb. *Todpole*.

In distinction, apparently, to the genuine Tadpole.

I have also heard the Polecat, in West Cornwall, called “fitchew”; the Stoat, in Oxfordshire, called “royal hunter”; the Wood Owl, in Sussex, called “’ollering owl,” from its cry. One bird—almost, if not quite, over the whole of the British Islands—changes its name according to the season of the year. People speak throughout the spring of hearing the “Corn Crake”; whereas in the shooting-season anyone lucky enough to be able to include one in his day's bag, almost invariably mentions it as a “Land-rail.”—ALFRED H. COCKS (Great Marlow, Bucks).

OCCASIONAL NOTES.

GAZELLE-HAWKING IN EGYPT.—Whatever doubts might have existed in the minds of the incredulous as to the ability of a hawk to capture so large a quarry as a Gazelle, they were effectually dispelled when Captain Burton published his 'Falconry in the Valley of the Indus;' and the frontispiece to this book, one of the most spirited and life-like drawings ever furnished by the pencil of Joseph Wolf, depicts a female Goshawk with uplifted wings grasping the head and face of a Gazelle, which she is pulling down in a perfect cloud of dust. It is unnecessary here to criticise this book further than to observe that considering the author did not profess to be either a naturalist or a falconer, and merely related what he had seen, he has made singularly few mistakes in dealing with a very technical subject. For the present purpose it suffices to remind the reader that Captain Burton has described Gazelle-hawking in the Valley of the Indus, where the hawk employed for the purpose is the Goshawk. A near approach to the quarry is made either by stalking or by rapid riding under cover of some kind, and the Goshawk is flown from the hand at a comparatively short distance from its prey. Those who are acquainted with the habits of the Goshawk know that on quitting the hand it flies directly at the quarry in a straight line, and does not mount to a height and "stoop," like a falcon or a tiercel. In Egypt, it would seem, a different practice obtains, and a different hawk is employed. The author of 'The Khedive's Egypt,' referring to this mode of capturing the Gazelle (p. 255), thus describes the sport:—"The Syrian Greyhound is a very beautiful specimen of the race; smaller, and with less length of limb than the English Greyhound, and consequently with a shorter stride, the rapidity of his movements and the toughness and tenacity of his muscles, render him no unworthy scion of the stock to which his British cousin belongs. Moreover, his long, feathery, tufted tail seems to act as a rudder to him, when in full flight across those breezy plains—an advantage which marks the difference between the Syrian and other greyhounds, to whom, in other respects, he bears the closest affinity. In the eyes and faces of the choicest specimens of these dogs there shines an expression of winning and almost human intelligence; yet, once launched in pursuit of game, they are as bloodthirsty as the sleuth-hound. The dog in Egypt, as throughout the East, with this exception, is a homeless and houseless vagabond, and semi-savage, prowling in packs, acting as scavenger only, and never domesticated, because considered 'unclean,' by Mussulman law and custom. The Prince Halim had the courage to brave this prejudice, and kept his greyhounds for the chase. But he also kept another and more curious class of creatures for the hunting of the Gazelle, probably the fastest in its movements of any wingless animal, *viz.*, his

hunting-hawks, which seemed the genuine descendants of the 'falcon gentle,' which was wont to afford such rare sport to our ancestors in the Middle Ages. * * * * The hawk used for this purpose is not the ordinary large Egyptian one, which hovers over the city of Cairo, poised in air on its wide wings, or circling around in search of quarry, but a smaller and fiercer bird, desert born and bred, with keen eyes and sharp talons, of which the larger brother stands in wholesome awe. These birds, trained much as were the mediæval falcons, seem to love the chase as much as their master, although their quarry be not the Heron, but the Gazelle. Their services were only brought into requisition after the chase had continued some time, and as an adjunct to the pursuit of men, dogs, and horses, all concentrating their energies against the life and liberty of the most lovely, graceful, and inoffensive of wild creatures, almost the sole tenants of these arid waters. After advancing a few miles into the desert, which presents one flat, dead, unbroken level of hard gritty soil (not sand), unrelieved by any shrub, grass, flower, or tree, bounded only by the horizon, and producing almost the illusion of a sea view, suddenly half a dozen slender, shapely forms spring up, and stand in bold relief against the sky, with heads erect, like statuary, some half mile distant. The sight seems at once to infuse new fire and vigour into the horses, dogs, and men, all of whom are immediately launched like thunderbolts in the direction of the quarry, which, pausing motionless for a moment, break into full flight the next, bounding marvellous distances each spring, and soon leaving even the fleet greyhounds toiling hopelessly in the rear; the distance between them visibly increasing, as the tireless Gazelles almost fly forwards, inspired by fear. The scene now becomes most animated, exciting, and picturesque, with the floating burnouses of the Bedouin or Egyptian riders, and the gay attire of horse and man, and the gallant Arab coursers stretching out to full speed with expanded nostrils and protruding eyes, and the feathery tails of the Syrian greyhounds waving like banners as they bound after the flying Gazelles. But vain are the efforts of all their enemies to gain upon, or even to keep pace with, the graceful children of the Desert. Horses, men, and dogs are falling rapidly behind; and even the forms of the Gazelle's are becoming indistinct, and with difficulty discernible, except to the eagle-eyes of the prince and his Bedouins, when a new ally is summoned to the assistance of the hunters, and a new foe launched at the heads of the triumphant fugitives. Rising in his shovel-stirrups, in full career, with the grace and dexterity of an Eastern rider, Prince Halim, slipping off the hood from the head of the hawk he carries on his right hand, with a peculiar shrill cry launches the bird into the air in the direction of the fast disappearing quarry. Thus released, the hawk circles rapidly upward until almost lost to sight, a mere speck suspended in blue ether, and seemingly motionless in the cloudless sky, blazing under

the fierce Eastern sun in a flood of light. A moment later the hawk can be seen shooting downwards like a lightning flash on the Gazelle, buffeting its head and blinding its eyes with the rapid blows of its strong wings. Almost frantic with fear and fury the Gazelle soon frees itself from its feathered assailant by striking its head upon the ground, and then resumes its flight; but the relief is only momentary, for the pertinacious assailant as soon as shaken off renews the attack, coming down on the antelope's head again and again, releasing it only long enough to avoid being crushed or impaled upon its sharp brow horns. Blinded at last and wearied by these attacks, confused by the cries of the approaching huntsmen, the terrified and exhausted Gazelle falls an easy prey to the Greyhounds and pursuing horsemen. Sometimes a young or badly-trained bird would fall a victim to his interference; for the efforts of the Gazelle to destroy, as well as to shake off, his tormentors, inspired by the instinct of self-preservation, are often as energetic as piteous to witness." The reader is not told what species of hawk is thus employed, but it is evidently not the Goshawk, for it is described as "circling rapidly upward until almost lost to sight." The flight is that of a falcon; and unless there be some poetic license in the description, which it is difficult to conceive if the author were really an eye-witness of the sport, it must be a falcon of some kind that is used, and a powerful one too. The Peregrine would scarcely be strong enough; it has nothing like the grip of the Goshawk, as I know from having carried both. The Icelander or the Jer-falcon would, in all probability, not be obtainable; the Lanner and the Barbary Falcon would be too small. What, then, is the species?—J. E. HARTING.

WHITE CHAMOIS IN SWITZERLAND.—In the 'Alpenpost' (No. 2, 1878), is an interesting communication from Dr. Lorenz, of Loire, upon the subject of white chamois. At the opening of the shooting season in September, 1877, a white chamois was shot in the valley of Safien, Canton of the Gresone. It was offered for sale to the cantonal museum for 500 francs (£20.) The directors of the museum refused to purchase it, and it was then sent to Zurich, where it was disposed of. Von Tschudi, in his important work on the "Alps," mentions as a very rare occurrence the fact of a white chamois being killed in 1853 above Sculms, a small village on the Hezenberg, between Bonaduz and Versam, in the Grisons. It was an albino, whose hoofs even were white, and the iris rose-coloured. Its horns were a little more than an inch in length, and but slightly curved. The fur of this animal was very thick and close, particularly about the neck, which was handsomely shaped, the muscles well developed. A second example of this variety was killed in October, 1867, on the Quentobel (Grisons). About thirty years ago a chamois-hunter of the Linthal shot a white chamois on the Sandalp, but no one was disposed to purchase, and it

was not known what became of the skin. Latterly a chamois-hunter of the Grisons declares that last autumn (1877) in the course of one of his many expeditions he saw two white chamois, so that the appearance of that variety is not an occurrence absolutely extraordinary, but except in the case of the one on the Sandalp, it would seem that it is only this one district of the Canton of the Grisons which has the peculiar favour of possessing this rarity. Happily for these interesting animals, this mountain district is strictly preserved. It is probable that the white chamois are always albinos, and consequently constitute an anomaly rather than a species. Nevertheless this question does not appear to be absolutely decided, as it has been in case of hares, for instance. The hare of the plains are sometimes found under the form of the white variety, says Tschudi, but it must not be confounded with that of the white variety of the Alps, because it had the eye rose-coloured like all albinos, and remains white all the year round. The white hare of the Alps, on the contrary, is generally found at an altitude of from 5000 feet to 8000 feet, and is white only in winter, for the colour of its fur only changes with the first severe cold. The points of the ear are the only parts of the skin the fur of which remains dark-coloured, and its eyes, far from being red, are even darker than those of the common hare. In summer the fur is grey with an olive tint mixed with black. The fur on the stomach only remains white, as also does a part of the ear.

PORPOISE-HUNTING IN NORWAY IN OLDEN TIMES.—The contemplated activity of the ancient porpoise-hunting guild at Middelfart, in the island of Fühnen, the oldest corporation of this kind in Norway, has led to an interesting correspondence in the 'German Fishery Gazette,' from which it appears that the inhabitants of Middelfart have carried on the sea-hog or porpoise-hunting as far back as the thirteenth century. This is clearly ascertained from old documents of the sixteenth century, indicating that the fishermans' guild of Middelfart had been prosecuting this porpoise-catching for some centuries back. The first statutes of the guild bear the date of the year 1559, being confirmed the same year by a royal decree granting to the inhabitants of Middelfart the exclusive right of porpoise-hunting in the Little Belt. This privilege had to be renewed whenever a new ruler ascended the throne, the fishery being carried on uninterruptedly till more recent times, except during the period of the Anglo-Danish war, when fishing ceased altogether. A reconstruction of the statutes was effected in 1854, receiving the royal assent in the following year, but the hunt has never since succeeded in reaching the same standard of prosperity it enjoyed in former times. The hunt always commenced on the 11th November, and lasted till the 2nd February, all the members of the guild being under the obligation to take part, and disqualified from engaging in

any other kind of fishing during the hunting season. The sea-hogs are during this period found proceeding in large shoals backwards and forwards between the East Sea and the Cattagat Straits. The fishermen must manage to drive these shoals into the so-called Gamborgfjord south of Middelfart. The hunt is rather troublesome, and is carried on by twelve boats, each containing three fishermen. The boats, upon the signal being given of a shoal of porpoises being in sight, move a little further out into the sea and then return, driving the whole herd into the little bay, each man vigorously lashing the water with a hazel-rod or a beech-branch, some 10 ft. to 12 ft. in length. The boats then draw gradually closer to the shore, and as soon as the porpoises have been driven into the Gamborgfjord, spread out the largest net—made of common twine, 120 fathoms in length, and with a width of 120 three-inch square meshes—fastened by one end to the shore, the other held by the furthestmost boat. The net, kept extended in the middle so as to form a half-circle, is then slowly drawn shorewards. A smaller net, of 60 fathoms length, made of double twisted hemp-lines, is next spread out after the porpoises have entered the shallow water. The shoal being thus caught and too frightened to make any attempt to escape, the fishermen jump from their boats into the shallow water and drag the inner net to the shore, when the killing commences. The men take hold of the porpoises one by one by their broad tail-fins, land, and stab them in the neck with a long-bladed knife, the same as when killing a young pig. Very little grunting is heard, the “swine-fish” not making any resistance. Several shoals are sometimes thus caught in one day. Full-grown species weigh from 50 to 60 lbs., producing 30 lbs. to 35 lbs. fat or lard and 12 quarts of train oil, the refuse making an excellent manure. The sea-hogs, keeping close to the shores when moving, are known to be afraid of a clear gravelly bottom, and prefer turbid water, which makes the Gamborgfjord the most suitable spot for this kind of fishing, the bay of the Fjord being narrow, with a bottom of a darkish colour, and everywhere covered with sea-weed, the favourite food of the sea-hogs. These facts account sufficiently for the Middelfart Porpoise Hunting Guild having been enabled to prosecute this pursuit so successfully during so many centuries.

CURIOUS NESTING FREAK OF THE COMMON BUZZARD.—In the beginning of May I was paying a short visit to a friend at Dulverton, our special purpose being to look for nests of the Wood Wren, which is more common there than in any other part of Somerset. We were not, however, very successful; but in the course of our search my friend pointed out a nest of the Common Buzzard, which we had seen last year, and from which he and his sons had then taken three eggs. There was also another nest close by,

but in another tree. My friend told me that he and his sons had watched the building of the new nest with great interest, expecting to get some more eggs again this year. Accordingly, when the nest was finished, and sufficient time had elapsed for the eggs to be deposited, one of the sons climbed up to the nest, but found no eggs; so they waited a few more days, and the son again climbed the tree, but was again unsuccessful in finding any eggs, though the birds were very noisy, and dashed at him several times, as they always do when a nest contains eggs, more especially if the female is sitting. After this second unsuccessful visit to the nest, a consultation was held between the father and sons as to what was to be done. They felt certain from the time that had elapsed since the nest was finished, as well as from the manner of the birds, that eggs had been laid and incubation commenced, yet there were no eggs in the new nest; so, after a little conversation, they agreed to try the old nest. The son accordingly climbed the tree to the old nest, and there he found three eggs partially incubated. This seems to have been rather a curious proceeding on the part of the Buzzards. Had they built the new nest and intentionally forsaken it as soon as built, and returned to the old one with the intention of misleading the egg-searchers? or had they deserted it, after seeing the first unsuccessful attempt on the new nest, and returned to the old nest, which had not been attacked this year? However this might have been, the *ruse* was nearly successful, the eggs being considerably incubated when taken. But, whatever might have been their reason, there can be no doubt that the Buzzards built the new nest, made no use of it, and returned to their old quarters. I have known Wrens build a nest, and apparently for no particular reason desert it and build another, not return to an old one; and I think Mr. Gurney, jun., has made some observations on this subject in 'The Zoologist,' though I cannot now find them, but I do not remember that he said anything about this being a peculiarity of the Buzzard also, nor have I known or heard of this peculiarity in that bird before.—CECIL SMITH (Lydeard House, Bishop's Lydeard).

INABILITY OF BIRDS TO DISTINGUISH EGGS.—This year I came across a nest of the Blackbird, in which I found two misshapen three-cornered flint stones (evidently picked out of the road), upon which, in addition to an egg laid that morning, the hen was complacently sitting. A week or two later I found a nest of the Spotted Flycatcher, containing three eggs, which I exchanged for three hazel-nuts, completely filling up the bottom of the nest; upon returning a day or two later, I found one of the nuts ejected, and a fourth egg laid in its place: the bird was sitting when I went up to it. Since birds evidently do not distinguish either stones or nuts from their eggs, it is easy to exchange the egg of one bird for that of another. A blackbird having built in a plum-tree in the garden, and laid two eggs,

having observed each evening that she regularly left the nest at 7.45 p.m. for about a quarter of an hour, I added an egg of the Song Thrush ; she never noticed the addition, but sat on the three until the same time the next evening, when, seeing that she had laid a third egg, I exchanged it for a second egg of a Song Thrush ; this was repeated the next day, and had it not been for a neighbour's cat I do not doubt but she would have laid her last egg the next day, and reared an equal number of Thrushes and Blackbirds. Shortly afterwards, I found a Spotted Flycatcher's nest between the fork at the base of the large branches of a plum-tree, containing two eggs ; I exchanged them for those of the Common Linnet, and the bird laid a third egg, which I also took, but gave her nothing in exchange ; to my surprise, she continued to sit, and when I returned from the country, the Linnet's eggs were just ready to hatch out. I also exchanged two eggs of the Greenfinch for those of the Robin, and two more eggs were laid, the second of which was white and spotted much like that of a Greenfinch.—ARTHUR G. BUTLER (10, Avington Grove, Penge).

GODWITS AND KNOTS RETAINING THEIR WINTER PLUMAGE IN SUMMER.—A singular fact connected with the spring migration of the Bartailed Godwit is that a large number remain about our bay and estuary late into the summer, long after their companions have reached their northern breeding grounds, and are engaged in rearing their young. Another fact, well worth the notice of naturalists, is that although in first-rate condition very few of the birds that remain with us (probably not one in fifty) exhibit the red summer plumage, but are always seen in their grey winter dress. During the months of March and April last Godwits were scarcer than usual in the bay and estuary ; flocks of only twenty or thirty birds were most usually met with. However, considerable additions were afterwards made to their numbers by birds from more southern localities, which as usual made the sands of the bay a resting place on their way to their northern breeding grounds. A considerable number of these birds remained after their companions had taken their departure, and lingered on through the months of June, July, and into August. On June 12th I observed about twenty birds on the sands near this place, and all appeared in the grey plumage, none showing any trace of red. On June 19th, being anxious to ascertain whether the Godwits still remained, I went down the river in my punt to a favourite haunt of theirs, near the Island of Bartragh, where I met with a flock of about one hundred and thirty of these birds ; and after examining them through a glass for some time I was only able to distinguish a solitary individual with the red breast of summer ; all the rest showing the grey backs and white under parts peculiar to the winter plumage. The flock afterwards broke up into small detached parties : one, of seven or eight birds, accompanied by the redbreasted one, I followed, but was unable to

secure the latter bird, though I shot three of the others; one was in the perfect grey plumage; and the only trace of summer shown by the other two was an odd red feather seen here and there on the front of the neck and breast, probably not more than half a dozen on each. Ten days afterwards, *i.e.* June 29th, I went down again, and saw about the same number of birds, probably the very same flock at the old haunt; but though I carefully observed them with the aid of a glass for nearly half an hour, I was unable to make out a single redbreasted bird. While watching the Godwits I was surprised to notice about twenty Knots amongst them, and these also were in the grey plumage. Wishing to examine these birds I shot a Knot and two Godwits, none of which showed any trace of summer dress; and the Knot, and one of the Godwits, had even begun the autumnal moult, the young feathers appearing being of a very light grey colour. When returning with the flood-tide I observed a few birds resting on the opposite side of the sandbank, and paddling round to obtain a closer view I noticed a pair of redbreasted birds standing in the shallow water apart from the others; on approaching within about seventy yards, with the aid of my glass I made them out to be a pair of Blacktailed Godwits in the beautiful perfect summer plumage—and very handsome they looked at the time, with the sun shining full on their chestnut-coloured breasts. I was unable to look after them again until August 2nd, when I met with about fifty Bartailed Godwits at the same place, three showing red breasts, but of a much paler red than that of the Blacktailed Godwits, seen on June 29th. These bartailed birds were evidently part of the flock which lingered about the sands throughout the summer, their excessive wariness proving almost conclusively that they were not birds lately returned from their breeding haunts; the latter, both old and young, being always tamer, and more easily approached than those which have remained about our shores throughout the season. In strong contrast to the late stay of the Godwits and Knots, some of our other waders returned unusually early from their breeding grounds; as early as June 19th I saw about seventy Redshanks and fourteen Greenshanks, near Roserk Abbey; and by the 29th the numbers of the Redshanks had increased to over two hundred, and the Greenshanks to about twenty birds. The shores of the islands near the Abbey are a favourite resting place for these waders in the early part of the season on their return from their breeding grounds, and before they scatter along the adjacent coasts for the winter.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

THE CAPERCAILLIE IN SCOTLAND.—At page 221 allusion was made to a paper read by Mr. Harvie Brown, before the Natural History Society of Glasgow, entitled—"A Chapter in the History of the Capercaillie in Scotland." From a report since come to hand we are enabled to supply

the following extracts, which we have no doubt will be read with interest :—“ Proprietors of pine forests often destroy Capercaillies in the doubtless just belief that they do considerable damage to the trees by picking out the leading buds, thus dwarfing and rendering the tree unfit for timber. Some naturalists, and proprietors of forest land as well, assign the results of stunted growth, turfy appearance of young trees, and deterioration of Scotch fir in this country to one or both of two other causes :—(a) The importation of impure seed, and hybrid ‘ strains,’ causing an inferior growth of less healthy wood, less able to stand the rigour of late frosts than the native and undegenerate Scotch fir, which latter is still to be found in some parts of Scotland, although native and healthy seed is scarce, or becoming so. It has been the fashion, too, of late years purposely to plant stunted and inferior kinds to provide cover for game. (b) The ravages of insects, principally beetles. Of these, *Hylurgus piniperda* attacks the cores of the buds and young shoots, piping the latter, and causing the former to drop off, stunting the growth of the trees, and making them bushy and useless. Another species bores into the wood and back of the stem, not to speak of ten or a dozen other beetles, as well as *Tenthredinidæ*, *Nematus*, *Coccus*, and their larvæ, which feed upon the leaves. The actual work of destruction carried on by the bird and by the insects may perhaps be easily distinguishable in most, if not in all, cases ; but the results in after years to the trees cannot always be so easily assigned to the work of any one of them. To these two causes perhaps a third may be added with safety,—improper exposure, insufficient drainage, unsuitable soil ; in short, bad forestry, and late frosts and bright suns acting upon unacclimatised or inferior plants, no doubt in some cases has something to do with it. Arising from these facts is the question whether these insects or their larvæ, individually or collectively, attack truly healthy native trees equally with diseased or inferior foreign importations. In answer to this we have Mr. Dunn’s evidence that they do, but he only speaks of one out of many pine-destroying species, viz., *Hylurgus piniperda*. He informs us that this beetle for the most part attacks trees under twenty-five years of age. If, as he affirms, Capercaillies only attack trees which are healthy, its attacks some day will be confined to trees above that age, if the *Hylurgus* become very populous throughout our forests. Notwithstanding strong evidence to the contrary from Mr. Dunn and Mr. Brown, of Perth, Capercaillies feed largely upon insects. This is specially the case when birds are young, but the probability is that grown birds do so also at certain seasons. We have seen that young birds feed largely upon the larvæ of *Tenthredinidæ* and other insects, and insect larvæ which live upon or are destructive to pines. The questions of interest arising from these facts are :—What appreciable damage can be laid to the charge of the insects, individually or collectively, or their larvæ ? Mr. Crawford, manager on the property of Clathick,

informs us regarding the ravages of two species of beetles that out of three hundred and fifty trees cut upon the estate, one hundred and twenty were dead, or at least gone in the top, owing, he believes, entirely to their ravages. Can anyone in the same way produce appreciable proofs of damage which can be laid correctly to the charge of the Capercaillie, and if so to what extent? What amount of good can be traced to the destruction of insect life by the Capercaillie? How long does the insect-feeding age of the birds continue? What insects or larvæ, and what amount of them, do the young Capercaillies consume? Do the old birds never eat insects, beetles, or larvæ of any kind? To solve these and other minor questions the crops and gizzards of both young and old birds should be examined with the critical eye of the entomologist, and exact statistics of the contents of each crop and gizzard noted down under each separate specimen, with the dates and localities, and when possible the probable or exact age of the bird. Birds from a day or two old up to the adult stage should be critically examined during the summer and early autumn months. Special attention should be paid to the presence of larvæ in the mouths, throats, and crops of young birds as soon after death as possible, or even of living young birds. Positive identification of the insects is of the highest importance, and the number of individuals should be carefully counted. Where personal entomological examination is practicable of the crops and gizzards of newly killed birds, such should be taken advantage of. Where personal entomological examination cannot be instituted, the crops and gizzards of each bird should be kept separately in close muslin bags, with parchment labels attached, and the whole dropped into alcohol: an ordinary wide-mouthed pickle-jar would probably hold three or four crops and gizzards, or more if the birds be young. The jars can then be forwarded to entomologists for identification of the contents. Dr. Buchanan White, of Perth, has promised assistance in the identification of insects. Mr. Robert Collet, of Christiania, who takes a great interest in the matter, will also devote some share of attention to it in Norway. Mr. Maloch, Perth, has promised to preserve any crops and gizzards that come in his way. Capt. Colquhoun, of Clathick, has offered assistance; and Mr. Maclellan, Superintendent of Parks, Glasgow, has also taken an interest in the subject. There is still a considerable degree of scepticism evinced by many as to the utility of such enquiries; unthinkingly they often pooh! pooh! the efforts of naturalists to get at the more minute truths, which do not always appear on the surface, but upon which not uncommonly the whole question at issue hinges. Investigations often begin in ignorance, and from a spirit of enquiry develop truths of considerable interest. Men are not all Argus-eyed naturalists, who can detect at once, at all times, and under all circumstances, the reasons for everything. If such were indeed the case Natural History would be robbed of half its charms."

NOTES FROM THE NEW FOREST, ON WOODPECKERS.—On May 26th I started in company with my brother from a village in the New Forest in search of Woodpecker's eggs. After taking a Wryneck's nest *en route*, with seven eggs, from an old tree in an orchard, we reached the forest, where the trees and glades, and fern and solitude—endless as it seems—offer a perfect paradise to the ornithologist. We were soon made aware of the fact that the Green Woodpecker is common there, for though we seldom caught a glimpse of him, yet his loud and merry laugh, as it echoed through the trees, and was answered far away by another of his species or his mate, seemed to say, "Don't you wish you may catch me." We noticed that before rain these birds were always more noisy. We soon found several trees with suspicious round holes,—generally beech trees, which are very numerous and very fine in the forest; but as the holes were, in all cases but one, some distance from the ground (from about fifteen to twenty-five feet), and as neither of us could "swarm" trees, we began to despair, without a ladder and a good chisel, of being successful. At last, towards evening, and after searching all day, we found a tree to which my brother thought he had seen a Woodpecker go. There sure enough under the tree were quantities of little bits of wood, as if some one had been chopping there. This being a sure sign that the Green Woodpecker has been at work (for they always clean out and deepen the nesting hole), we looked up and saw a hole some twenty feet from the ground, but it did not look fresh, or as if used. However, by aid of some branches I managed to get up, but could not get my hand in, as the birds invariably make the hole just, and only just, large enough to admit themselves. I knocked the tree, but no sign of any bird, though we heard a laugh or two from one in the trees near; as I descended out flew the old bird from the identical hole. What was to be done? we had no doubt there were eggs in, and get them we must. Off we set to a cottage we had seen some half a mile away (houses are very few and far between in the New Forest), borrowed a ladder they happened to have, asked for a saw which, being about a yard long, would not do, and finally succeeded in getting a large hammer and chisel, and the owner thereof to accompany us. On reaching the tree, our guide, somewhat like a squirrel, was soon up; and as the blows of his hammer resounded through the forest the chips flew off, and in ten minutes the hole was large enough to admit one's hand. I got up, and found the old bird sitting on four eggs, which were quite fresh. The bird was released, and the eggs blown. There was no nest; the eggs, which are pure white, and look like pearls before blowing, were snugly laid on the rotten wood. This seems to be the case with all the species. The Green Woodpecker generally lays seven eggs, and I should think from the date, May 26th, that the bird had been previously disturbed, and laid again. We saw several eggs, taken about May 12th. The birds seemed to prefer beech trees (perhaps from

their being more numerous than any others), and selected either isolated ones, or one of two or three. It may be where the timber is thick and closely planted the trees are younger, and not adapted for boring into. The entrance hole is round, or sometimes oblong, and has to go some inches in, according to the thickness of the tree, before reaching the middle, or rotten part, when it goes down from two to three feet. There are often two holes; whether one is an escape hole in case of danger, or whether as the bird deepens the hole year by year she taps it into another place for convenience, I am not prepared to say. I am disposed to think it is made as an escape hole. I found near Penmaenmaur, North Wales, this year, on May 29th, a Green Woodpecker's nest, with young ones just hatched. Our guide informed us that he knew of a "Magpie-Woodpecker's" nest, from which we inferred he meant the Lesser Spotted Woodpecker. He took us to a small, dead, stripling oak, or remains of one, ten feet high, and there at the top in a small hole, similar to what a Cole Tit would make, was the nest, or rather the eggs. We soon cut the hole open, and found six eggs in,—white, smaller than the Wryneck's, and hard sat. We managed, by great perseverance and care, to blow four of them. The bird seemed very shy, and left before we reached the spot. As the tree was in the midst of several hollies the eggs would never have been discovered, but from the fact of a noisy Great Tit, whose nest was in the same tree, having attracted our guide to the spot, and caused him, after seeing the "Magpie," as he called her, to search for the nest. This kind of Woodpecker seems far less numerous than the green.—H. G. TOMLINSON (The Woodlands, Burton-on-Trent).

NESTING HABITS OF THE KESTREL AND SPARROWHAWK.—In most works on ornithology the Kestrel is said to build its own nest; sometimes taking, however, the deserted nest of a Crow or Magpie; and just *vice versâ* for the Sparrowhawk. During the last three or four years I have examined personally a considerable number of Kestrel's nests, with the view of ascertaining the correctness or otherwise of the above statement, with the following result:—All but five, out of about thirty, were in old Magpie's nests. Sometimes I found the dome entirely removed, at other times it was left on. In no case did I find they had taken the trouble to line the nest, save now and then two or three pieces of sheep's wool were added. Of the other five, four were in crows' nests, and the remaining one was perhaps of the Kestrel's own manufacture; but of that I am doubtful. As to the trees the nests were in, most preferred elms, then oaks, some fir trees, two ash trees, and the last laid in a Magpie's nest in a thorn bush! The number of eggs was generally five, a few of four each, and three of six each. I have not been able to examine nearly so many Sparrowhawk's nests, it being a very much rarer bird in most of the Midland Counties.

Almost all of the nests I found were undoubtedly of the Sparrowhawk's own make, one or two were in crows' nests, and I never found one in a Magpie's. They generally preferred fir tree, especially Scotch, and, unlike the Kestrel, they do not like building in an open country; the latter appear indifferent, but Sparrowhawks greatly prefer a fir tree spinney. The eggs vary in number from four to six; the last nest I found was in a larch tree, and contained the latter number. When the young Kestrels are hatched the parents supply them with rats and mice in large quantities. By the time the young are ready to fly the nest will be found to be quite flat at the top, owing to the accumulation of "pellets," composed of the indigestible parts of their prey, that the birds eject. The number of mice and rats destroyed by a single pair of these birds in one season is perfectly marvellous. I have never found any remains of birds in either the nest or the "castings." Not so, however, with the Sparrowhawk; the young seem to be fed in a great measure on Missel Thrushes; and the latter bird, more than any other, serves to satisfy the hunger of the parents. They are also very fond of little rabbits, greenfinches, and sparrows. Both species of birds lay eggs differing very much in size and colour: Sparrowhawk's are just as frequently blotched at the smaller end as they are at the larger; and Kestrels lay two varieties, one having deep red for the ground colour, the other brown.—C. MATTHEW PRIOR (The Avenue, Bedford).

PUGNACITY OF THE WATERHEN.—The Common Waterhen is known to be a species in which combats between individuals (probably males) frequently occur; but the following description of such a contest noted by an eye-witness, who communicated it to me, may perhaps be worth recording. The occurrence took place in a wood at Northrepps, Norfolk, on the 31st July. My informant says:—"I saw a regular combat between two Waterhens yesterday. On hearing a noise amongst some elder bushes I went close to where the birds were fighting. They had taken fast hold of each other's wings, near the body, with their feet, and were rolling over and over, pecking each other meanwhile with their bills. After two or three minutes they rested, and then began again, till I separated them, when I found that one appeared to have been injured in the eye by the attack of its opponent."—J. H. GURNEY (Northrepps, Norfolk).

PROVINCIAL NAMES OF BRITISH BIRDS.—Having for some time collected Scotch local names of birds, I am much interested in Mr. Little's notes of those used in Cornwall (p. 222). With Scotch names it is very hard to define the district to which many belong, the same being used in places far apart. In some cases also the same are used in different districts for different species. The origin of many of these names would form a curious study, and would no doubt bring to light much of interest to the philologist as well as to the naturalist. Some of the names given in the Old Statistical

Account of Scotland are very quaint, but a few I think must be taken with reservation. My friend Mr. J. A. Harvie Brown has kindly made a list of them for me, and I daresay will communicate it to 'The Zoologist.'—JAMES LUMSDEN, JUN. (Arden House, Dumbartonshire).

OCCURRENCE OF THE TREE PIPIT IN IRELAND.—Two birds of this species have been lately observed by some friends and myself—one near the old church of Portmarnock, on the north side of Dublin, and the other close to Milltown Railway Station, on the south side. We have repeatedly seen the latter bird rise from the ash trees by the roadside, and describe a half-circle in the air, returning to the trees again, and frequently to the highest branch. Its song—"the monosyllabic effusion 'tsee, tsee'"—could be heard at a considerable distance, and differed a good deal from that of some Meadow Pipits close by. I have never noticed this bird before, and am glad to be able to record its occurrence. I carefully observed it for several days before writing, and hope to procure a specimen before the autumnal migration. I have looked everywhere for the Blackcap about Dublin, but this year in vain.—C. W. BENSON (Rathmines School, Dublin).

[So far as we are aware, the Tree Pipit, which is a well-known summer visitant to England and Scotland, has not hitherto been recognised in Ireland, and the present, we believe is the first recorded instance of its occurrence in the sister isle.—ED.]

THE WOOD WREN IN IRELAND.—I was fortunate enough to obtain a specimen of the above rare Irish bird in beech woods here on the 1st June last. There were three or more in company, and I shot one while in the act of singing. I watched them for some time through a glass first, and I could observe well the "heaving breast and quivering wings" as it trilled its "short, shrill, feeble, tremulous song." This latter was its more frequent note, while the "long, anxious cry four or five times repeated, which would be a sequel were it not so sweet," seemed unaccompanied by the motion of its wings. The specimen I obtained I have sent to Mr. More, for the Museum of the Royal Dublin Society, who has kindly sent me the following particulars concerning its occurrence in Ireland:—Thompson, in his 'Natural History of Ireland' (vol. i., p. 189), mentions it as holding "a very doubtful place in our fauna." He then gives two instances of nests belonging to a larger and *whiter* bird than the Willow Wren, but both were lined with feathers, which the Wood Wren is known not to use; it seems to me also that "greener" or "yellow" would be a more appropriate adjective to apply to the Wood Wren. In Prof. Newton's edition of "Yarrell" (vol. i., p. 430), it is stated that "Mr. Harting was informed by Sir V. Brooke of his having shot it in County Fermanagh,* and by Mr. Blake-Knox of his

* Is this specimen still in existence? [We believe it has been preserved by Sir Victor Brooke.—ED.]

procuring a specimen shot in the county of Dublin." Nevertheless the bird is certainly not so rare as is supposed; I have been familiar with its song for seven or eight years, and I have often watched it and wondered what the bird was when unable to procure a specimen. I have known several pairs for three separate summers in the oak woods of Derrybawn at Glendalough, County Wicklow, and in different parts of that beautiful place. I have also recognised the song and watched the birds amongst oaks near Powerscourt Waterfall, and in the Devil's Glen, in the same county; and it was a great delight to me to be able to solve a difficulty of so many years standing at last, in spite of the pity it was to shoot so beautiful a little bird. From the range which the above localities give the bird in Ireland, it has no doubt escaped observation in intermediate districts. I would suggest, for instance, that it most probably visits the wooded glens in the County Antrim, which are admirably suited for it. When I obtained the bird I had no difficulty in identifying it, as I was fortunately possessed of 'Our Summer Migrants.' I think Charles Kingsley's description, from which I have quoted, hits off the idea of the song to perfection. Perhaps I ought to mention that the other Wood Wrens left for good after the death of their messmate.—H. CHICHESTER HART (Glenalla Bay, Co. Donegal).

PARTRIDGE SWIMMING.—On July 15th, whilst taking a walk by the side of the River Rye, in a grass-field called the Mickle-holme, a dachshund that I had with me "set" two Partridges underneath a thorn-bush growing a short distance from the river. Immediately after I heard a splash in the stream, and on going to the side, I saw in the middle one of the Partridges. It did not seem to be in the slightest degree frightened, but calmly paddled, apparently with as much ease as a common Moorhen underneath a bush on the farther side, and I saw no more of it. The bird could easily land from the bush. I looked about the bush out of which the birds flew, but could not discover any nest. The fact of a Partridge being able to swim was to me a great surprise, and I shall be glad to know whether any of the readers of 'The Zoologist' have ever witnessed a similar action on the part of this bird.—WALTER STAMPER (Highfield, Oswaldkirk, York).

[We have known more than one instance of Pheasants swimming, and a Landrail will take the water well and fearlessly.—ED.]

HYBRID BLACK GROUSE AND CAPERCAILLIE.—Mr. Edward Jackson, of the Poultry Market, Smithfield, was recently good enough to send for my inspection a well-preserved specimen of a hybrid between the Black Grouse and Capercaillie. It was received in a large consignment of blackgame from Norway in the month of March last, and was the first of the kind Mr. Jackson had seen. With the crest and beard of the Capercaillie, it has the glossy neck-feathers of the Blackcock, and tertials like those of the Capercaillie. The shape of the tail is exactly intermediate between those

of the two species. Although such hybrids are not unknown to naturalists, they are perhaps sufficiently uncommon to deserve notice when met with.—J. E. HARTING.

SONG THRUSH INCUBATING ON THE GROUND.—On the 10th June, while rambling with my brother in the Peak District of Derbyshire, we found a Thrush nesting under circumstances that were quite new to us. We were descending the steep but grassy slope of a hill some 1600 feet above sea-level, and when about fifty feet from the summit, a Thrush rose from under our feet, discovering four eggs laid upon the short grass without trace of any nest. The hill faced the north, and the narrow ledge upon which the bird sat was fully exposed to the weather, which was very cold and wet about that time. I have heard of Thrushes laying upon the ground under the shelter of a bush or overhanging bank, but never in such an exposed situation.—E. A. BROWN (Burton-on-Trent).

CHIFFCHAFF NESTING AT A HEIGHT FROM THE GROUND.—Mr. J. E. Palmer says (p. 254) that "Professor Newton mentions in his edition of 'Yarrell' two instances in which this bird has been known to build in other situations than on the ground." This would seem to imply that the nest is generally placed on the ground. I have found a great many nests of this bird at different times, and they have all, without exception, been placed in bushes, brambles, and low hedges above the ground, from one to three feet. Indeed I believe the nest of the Chiffchaff is never placed on the ground, and when the contrary has been stated the nest of the Willow Warbler has been mistaken for it. The nest and sometimes the eggs of these two birds are much alike. I shall be glad to know if I am correct.—H. G. TOMLINSON (The Woodlands, Burton-on-Trent).

[We have found numerous nests of the Chiffchaff on the ground *in woods*, under brambles or other thick undergrowth, as well as on hedge-banks.—ED.]

CUCKOO LAYING TWICE IN THE SAME NEST.—An instance somewhat resembling that mentioned in the July number of 'The Zoologist' (p. 256), of a Cuckoo laying two eggs in the same nest, has just occurred in our stackyard, where, some time back, a Pied Wagtail's nest was discovered in one of the stacks containing a young Cuckoo. For a fortnight or more before this, a Cuckoo was seen almost every afternoon about the garden, and just before the young one left the nest the old Cuckoo was several times observed to fly past within two or three yards of the nest, though never to settle by it. The young Cuckoo left the nest on the 27th June, and on the 30th my brother discovered in the same nest a Cuckoo's egg, together with one of the Pied Wagtail. I see but little reason to doubt that the two Cuckoo's eggs were laid by the same bird.—R. M. CHRISTY (Chignal, near Chelmsford).

WILLOW WREN NESTING AT A HEIGHT FROM THE GROUND.—I heard the other day that a nest had been found in a clump of whins, and from the description given of the bird and nest I surmised it was a Willow Wren. Wishing to ascertain whether this was the case I went, July 9th, to the place, which is about a mile distant, and found my surmise correct. It was built about two feet from the ground, and contained four eggs. This is the second instance in which I have found the nest of this species at some height from the ground. I found one in July, 1876, built between two rocks at a distance of three feet from the ground; and what was a remarkable coincidence both were built near the Goit-stock Waterfall. Whilst rambling in Upper Wharfedale, last Whitsuntide, I met with the nest of a Cole Tit in an abnormal situation. It was built in a hole in a steep bank, a few yards from an old moss-covered wall, in a fir plantation, and contained young ones nearly fledged. What inducement had operated to determine the bird to select such an unusual site I am at a loss to imagine. The immediate neighbourhood offered far more apparently suitable breeding places.—E. P. P. BUTTERFIELD (Wilsden).

SWORDFISH IN MOUNT'S BAY.—Mr. A. O. Michell, of Chymowak, on Thursday last, August 15th, captured a swordfish, *Xiphias gladius*, in Mount's Bay. It was seen, and deliberately fished for, and taken on a hook and line. Mr. Michell very kindly sent the specimen to me, and I am therefore able to give you its measurements:—Length, including sword, 8 feet 7 inches; without sword, 6 feet 4 inches; from nostril to tip of sword, 2 feet 3 inches; greatest girth, 3 feet; from tip to tip of caudal fin, 2 feet. Weight, 138 lbs.—THOMAS CORNISH (Penzance).

SWORDFISH AND SUNFISH ON THE COAST OF DEVON.—On the 9th July a fine female swordfish, *Xiphias gladius*, nine feet six inches long, including the sword or snout, and weighing three and a half hundredweight, was captured near the Eddystone in the drift-net of the fishing lugger 'Dewdrop,' and brought into Plymouth for exhibition. Upon examination I found several remarkable parasites, about ten inches long, adhering to the body just under the pectoral and other fins, which had pierced through the skin so deep that it required a very strong pull to get them out. Mr. Couch, in his account of the swordfish says:—"This fish shows itself as one of the most active of our visitors, occasionally springing above the surface, an action supposed to be caused by the irritation it suffers from the torment inflicted by a parasitic animal that sometimes pierces through the skin beneath the pectoral fins." Adding, "It is probable, however, that this leaping above the surface which has been witnessed by our fishermen is frequently to be attributed to a wanton exuberance of spirits, and although many instances are recorded of the capture of this fish in Britain we are not acquainted with one in which the attention of observers has been drawn to

the presence of this supposed enemy." I am pleased to say that I was able to secure one or two of these extraordinary parasites, which I have preserved in spirit. I was also much struck with the angular fin-like processes, one on either side of the body, near the tail, the use of which, I have an idea, might possibly be—acting on the principle of the feathers on the end of an arrow—to steady and direct the swift course of the fish when making its vigorous thrust. The specimen is, without doubt, an adult one, from the fact of its dorsal fin, although very high in front, being worn down to a level with the back unto near the end, when it rises again into a small fin. It was very amusing to hear the exhibitor, when describing this "monster of the deep, or whale destroyer," as he called it, inform the visitors that the animal, having no teeth, evidently lived by "suction," at the same time saying how many mackerel, herrings, and pilchards he had taken from its stomach; and that it was a young specimen, as a captain of a ship, who had seen hundreds three times as large as the one exhibited, informed him that when full grown, "there were teeth all along the edges of the sword!"—of course meaning the sawfish. A few years since I saw a portion of the beak of a swordfish which had been driven clean through the side or bottom of a Plymouth trawler, where it broke off and remained, but still causing a leak. During the month of July many sunfish, *Tetraodon mola*, made their appearance on the coast of Devon. An immense one was taken at Torquay, measuring some eight feet "from fin to fin"—as it was described—and about five feet long. I also examined one, of smaller dimensions, that was captured off Cawsand Bay, near Plymouth, on the 17th, and was much struck with the prominent brow, or frontal bone, which became apparent when the flesh began to shrink, after being a day or two out of the water, considerably altering the profile and form of the face. Blue Sharks were also plentiful on our coasts about the same time, and several were captured. Their appearance no doubt was attributable to the abundance of mackerel and other fish in the neighbourhood at the time.—JOHN GATCOMBE (55, Lower Durnford Street, Stonehouse).

CORNISH CRUSTACEA.—In the course of the last five days (second week of August) I have procured the following species, mostly from the deep sea, at Prussia Cove, Marazion:—Wrinkled Swimming Crab, *P. corrugatus*, very small, not half an inch across the carapace; Long-armed Munida, *M. Rondeletii*; Andrews' Galathea, *G. Andrewsii*; Long-horned Porcelain Crab, *P. longicornis*; Long-legged Spider Crab, *Stenorhynchus longirostris*; a Common Spider Crab, *Maia squinada*, half the adult size, but covered all over the back with a growth of some small, thick and long sea-weed or semicoralline substance, just as Gibbs' Spider Crab usually is. Besides these there were, of course, the crabs common to the place.—THOMAS CORNISH (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

July 3, 1878.—H. W. BATES, Esq., F.L.S., F.Z.S., President, in the chair.

Mr. Basil George Nevinson, of 19, Torrington Square, W.C., was ballotted for and elected an ordinary Member. Mr. John A. Finzi, of 105, Gower Street, W.C., was ballotted for and elected a Subscriber.

Mr. F. P. Pascoe exhibited a selection of insects of all orders, as well as of Arachnida and Myriopoda, from a collection recently made during a tour through Algeria and the South of Spain. He also called attention to a remarkable Myriapod, having the cylindrical body of the *Julida*, but with only one pair of legs to each somite.

Mr. W. C. Boyd drew attention to the food-plant of *Elachista cerussella*, which has been always reputed, both in this country and on the Continent, to feed in the leaves of *Arundo phragmitis*. He stated that although he could not positively assert that the insect never feeds on this reed, he much doubted its doing so, as the *Arundo* does not usually come into leaf till the larva of *Elachista* is half-grown. All the specimens which he had bred were found in the leaves of *Phalaris arundinacea*, a grass which somewhat resembles *A. phragmitis* before the flower appears; hence, no doubt, the mistake.

Mr. H. T. Stainton remarked that although Mr. Boyd had shown that the *Elachista* larva undoubtedly feeds in *Phalaris arundinacea*, it must still be regarded an open question whether it does not also feed in *Arundo phragmitis*.

Mr. W. L. Distant exhibited an Homopteron which had been sent to him for identification, through Dr. Sharp, from Mr. Lawson, of Auckland, New Zealand. The species was *Ricania australis*, Walker, and Mr. Lawson wrote that it had been observed last year on the dahlia for the first time. The markings of the New Zealand specimen were, however, much darker than those of the Australian ones, and therefore if, as possible, the insect had been introduced from Australia, its arrival must probably have taken place some time ago to allow for the process of melanism which had ensued.

Mr. J. Jenner Weir exhibited two specimens of *Leucania turca*, with several pollinia of *Habenaria bifolia* attached to the trunk of each, these being the only two out of fifty specimens which had the pollinia thus attached. He had been able to satisfy himself, by comparison, as to the species of orchid from which the pollinia had been removed. Mr. Weir also exhibited a specimen of *Hipparchia hyperanthus*, in which the ocelli on the under side of the fore and hind wings were unusually large, oval, and with the central white spots ovate and acuminate outwards. The specimen

was taken in the New Forest, and was the first of the species observed at the latter end of June.

Prof. Westwood called attention to a note in 'Nature' of June 27th (p. 226), reprinted from the 'American Naturalist' for June, and relating to the manner in which Lepidoptera escape from their cocoons. The article referred to is by Dr. A. S. Packard, who records his observations on *Actias luna*, and describes and figures the cocoon-cutter by means of which this moth cuts its way out. Prof. Westwood claimed priority for the 'Transactions' of the Society where similar observations are recorded by Capt. Hutton (1st series, vol. v., p. 85), who describes "the method by which *Actias selene* cuts its way through the cocoon," and also calls attention to an instrument which he names the "wing-spur."

Prof. Westwood also stated that he had recently heard of injuries done to potato crops by insects which had not hitherto been considered injurious, viz. *Cetonia aurata*, which had been found stripping the leaves, and a lepidopterous larva (probably a species of *Botys*) which bored into the stem.

Mr. Jenner Weir stated with reference to the organs at the base of the fore wings in the large *Bombycidae*, that he had distinctly heard a clicking noise in the cocoon of *Attacus polyphemus* just before the emergence of the imago, caused without doubt by the creature's sawing asunder the silk threads with the organs in question. He had not heard the same noise in the cocoons of *Attacus cyynthia* nor in those of *A. cecropia*.

Mr. Dunning read the following "Note on Spiders resembling Flowers":—

"At recent meetings of the Society we have had brought to our notice several interesting cases of resemblance between insects and plants, the suggestion being that the insects thereby obtain protection from foes, or that in some other way the resemblance is advantageous to them in the struggle for existence. The following observations, made by my friend Mr. Thomas Nottidge, of Ashford, appear to afford other instances of the same class of phenomena, in which spiders are the possessors of the protective or imitative resemblance:—'On the 11th May, 1878,' Mr. Nottidge writes, 'in the beech woods on the escarpment of the chalk between Westwell and Charing, Kent, I noticed the number and variety of the insects that visited the blossom of the wayfaring tree, *Viburnum*, and on taking the blossom in my hand, I found a spider most beautifully disguised both for protection and for the easier capture of her prey. The spider was all over of a pure creamy white, the exact tint of the flower, and her abdomen exactly resembled the unopened buds—of which there were many in each cyme of blossom—not only in colour, but also in size and shape. Nearly every bunch of blossom was occupied by one or more of these spiders, the young and half-grown ones being just like the full-grown ones in colour. The male was not so well disguised as the female, having a few black dots on his back and some black about the head and jaws. Many of the spiders

had captured insects, and one had got a large drone-fly, which was still alive, and which after a long fight escaped. These spiders are hunters, not web-spinners; but I was amused to observe that one which I took in my hand ran up to the highest point at once, and holding up the abdomen let a thread run out on the gentle breeze—the sun was shining and the thread was quite visible—until it touched a twig about sixteen inches from my hand; he then let himself drop from my hand and ran up the thread to the twig; I thought this mode of escape was adopted by spiders only as a *dernier ressort*. I had no means of carrying off one of these spiders. What becomes of them later in the summer? for as soon as the white blossoms are gone, his colour would be a great disadvantage.'

"I was unable to accept an invitation to see these spiders *in situ*, but two or three weeks later I received a further communication from Mr. Nottidge. 'On the 10th June,' he writes, 'at Petersfield, Hants, I found a white spider, very similar to, if not identical with, the one I described to you: he was in the blossom of the wild guelder-rose. He differed from the one I found near Westwell in having reddish brown spots on the side of the abdomen, but they were not sufficiently distinct to interfere with the completeness of his disguise. There were many bushes of the mealy *Viburnum* close by, but the blossom was over. On the same day, and in the same locality, I found a very similar spider on the blossom of *Orchis maculata*, but in this case the spots on the sides of the abdomen were large, of a dark red-brown colour, and very sharply defined; and when the spider stood in his usual position, with his head downwards, these spots very closely resembled in size, shape, relative position, and—at a yard's distance—even in colour, the dark purple pollinia of the flowers. I found many specimens of the spider on *Orchis maculata*, one on each spike of blossom, but I searched in vain for one on the dwarf orchis (*O. ustulata*), although this is much like *O. maculata*, but its pollinia are not dark in colour. Can it be that as the season advances this spider changes colour, and that by each successive change he is specially adapted to live concealed on the blossom of some special plant?'"

Mr. Dunning exhibited three living specimens of the spiders captured by Mr. Nottidge at Petersfield, on the guelder-rose and on *Orchis maculata*. Apparently they were all females of *Thomisus citreus*, a common species on flowers, the sexes of which are so dissimilar in size and colour that they have been described as distinct species.

Mr. Jenner Weir remarked that he had lately been observing the habits of the same species of spider in the New Forest, and that he had seen it sometimes station itself in the centre of a composite flower, with its legs expanded like the exterior rays of the flower, and sometimes in the flowers of orchids, with its legs extended horizontally. It appears to be able to destroy even the honey-bee, which he had found dead in its clutches.

The Secretary read a note by Mr. J. Haselden, communicated by Sir Sidney Saunders, relating to the habits of the honey-bee (*Apis fasciata*?) in Egypt.

Mr. C. O. Waterhouse communicated a paper "On New Coleoptera from Australia and Tasmania in the Collection of the British Museum."—
R. MELDOLA, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Thirteen Years among the Wild Beasts of India: their Haunts and Habits from Personal Observation; with an Account of the Modes of Capturing and Taming Elephants. By G. P. SANDERSON. 4to, pp. 387, with Maps and Photo-tint Illustrations. London: W. H. Allen & Co. 1878.

MR. SANDERSON is the officer in charge of the Government Elephant-catching Establishment in the province of Mysore, Southern India, which establishment, some few years ago, was instituted principally through his instrumentality and energy. It is here that most of his experience of wild animals has been gained from the time when he first set foot in India as a "griffin," and "an opportunity was afforded him of changing what had hitherto been his favourite recreation only—sport—into the business of his life." Having met with considerable success in capturing wild elephants in this province, he was appointed to the temporary charge of the Bengal Elephant-catching Establishment, and spent nine months in the wild and little-known region of the Garrow and Chittagong hill-tracts, subsequently returning to Mysore. It will be readily conceded that a man who has enjoyed such opportunities, in such a country, for sport and the observation of wild animals, should be well qualified to write a book like the present. Indeed, as the author himself says, "Anyone who has devoted himself to Indian field sports for some years as I have done, must have been singularly unfortunate if he has not sufficient exciting facts noted in his journal to fill a book, without the necessity of resorting to fiction or exaggeration."

The game list of Mysore is a very attractive one, including as it does the following *feræ naturæ*:—Elephant, Bison or Gaur, Tiger, Panther, Leopard, Cheetah, Bear, Wolf, Striped Hyæna,

Wild Dog, Sambur, Spotted Deer, Barking Deer or Muntjac, Indian Antelope (*Antelope bezoartica*), Indian Gazelle or Ravine Deer (*Gazella Bennettii*), Wild Hog, Crocodile, Jackal, Fox, Jungle Cat (*Felis chaus*), Leopard Cat (*F. bengalensis*), Otter, Porcupine, Mouse Deer (*Memimna indica*), and Hare.

Of these the Cheetah is said to be "exceedingly rare," and neither the Antelope nor the Gazelle is considered numerous, but the rest are apparently common enough.

Of most of these Mr. Sanderson has a good deal to say, and in regard to the more dangerous animals relates some very stirring adventures. The elephant naturally receives the largest share of his attention, and the chapters devoted to this animal are full of useful statistics and information brought down to the present year.

Contrary to what is occurring in Africa, where elephants are getting every day scarcer from continued persecution, the Indian wild elephant is protected by Government, and enjoys perfect immunity throughout the Western Ghâts and the vast jungles which extend for hundreds of miles along the foot of the Himalayas into Burmah and Siam.

The mode of catching wild herds in *kheddahs*, as practised by the author to supply the Government of India with beasts of burden, is fully described, and the description is rendered the more attractive and instructive by the maps, plans, and nicely-executed photo-tints which accompany.

The largest elephant measured by Mr. Sanderson stood nine feet ten inches at the shoulder, and the biggest he ever killed, a dangerous rogue-elephant in the Kakankote jungle, was nine feet seven inches at the shoulder, and measured twenty-six feet two inches and a half from tip of trunk to tip of tail. The tusks alone weighed seventy-four pounds and a half.

The price of elephants has risen enormously. In 1835 it was £45 per head; tuskers of any pretensions are now worth from £800 to £1500 a-piece, and nothing is to be had, as a rule, under £150. The chief mart in India for the sale and purchase of elephants is at Sonepoor on the Ganges, where a great fair is annually held for the purpose.

It would scarcely be supposed that so unwieldy a creature as an elephant could swim well, and yet it does so probably better than any other terrestrial mammal. In November, 1875, Mr. Sanderson made seventy-nine elephants swim across the Ganges and several

of its large tidal branches, and at the widest part they were six hours in the water without touching the bottom. After resting for some time on a sandbank, they again took the water, and swam for three hours more, completing the journey in safety.

Mr. Sanderson's experience in the pursuit and capture of wild elephants, and the success of the method employed by him, enables him to speak as familiarly of catching a herd of elephants as a poacher would speak of driving partridges into a tunnel-net, or a fen-man of taking widgeon in a decoy. He once took fifty-three elephants in one "drive"!

But his book is not merely a record of sport, although it abounds with well-told adventures. It gives also some account of the natural history of the wild animals met with, and the reader, besides learning a good deal about forest life in India, obtains a very fair insight into the character, manners, and customs of the natives, amongst whom the author has lived so many years, and upon whose assistance he has had so largely to rely in carrying out his successful, though often dangerous, expeditions. "The peculiar opportunities," he says, "which have been afforded him of following his natural inclinations, and, by the nature of his duties, of encountering the wild animals of Southern India and Eastern Bengal, induced him to believe that his experiences might be of some interest to the general public, and perhaps of some service to the cause of Natural History." We think there can be no doubt that both the classes of readers referred to will highly appreciate his undertaking.

Although we have alluded in detail to only one of the large animals of which the book treats, the chapters on the others possess almost equal interest, not only on account of the information imparted concerning the range, habits, and instincts of the species mentioned, but also for the useful statistics and hints with which the narrative is interspersed, and which cannot fail to be of service to sportsmen in India.

The Gamekeeper at Home: Sketches of Natural History and Rural Life. Post 8vo, pp. 216. London: Smith, Elder and Co. 1878.

THIS pleasantly written book, by an anonymous author, commends itself to three classes of readers—to the inexperienced

country gentleman who would learn the requirements of a good keeper; to the naturalist who delights in roaming about the woods and fields, and observing the habits of wild animals; and to the keeper himself, to whom many a piece of sound advice and useful "wrinkle" is imparted. To these three classes we might almost add a fourth—the poacher; but we must assume that the descriptions which are given of various nefarious practices to which these gentry are addicted are not intended for the rising generation of poachers, but for the guidance of the keeper, and the safeguard of his master's game.

From the scenery described, and some of the provincialisms introduced, one would say that the book might have been written in close proximity to the Wiltshire Downs; but as the author has chosen to omit his name from the title-page, it is perhaps scarcely fair to attempt to withdraw the veil which conceals his identity. The writer, whoever he may be, has a facile pen, and the art of describing what he observes truthfully and forcibly, producing not unfrequently a picturesque effect by a skilful assemblage of common-place objects. His description of the woods in wet weather (p. 41), the park in spring (p. 62), and the haunts of birds (p. 65), may be cited as instances of this. The following extract will give some idea of the author's style:—

"Often and often when standing in a meadow gateway partly hidden by the bushes, watching the Woodpeckers on the ant-hills, of whose eggs, too, the Partridges are so fond (so that a good ant year, in which their nests are prolific, is also a good Partridge year), you may, if you are still, hear a slight faint rustle in the hedge, and by and by a weasel will steal out. Seeing you he instantly pauses, elevates his head, and steadily gazes; move but your eyes, and he is back in the hedge; remain quiet, still looking straight before you, as if you saw nothing, and he will presently recover confidence, and actually cross the gateway almost under you.

"This is the secret of observation: stillness, silence, and apparent indifference. In some instinctive way these wild creatures learn to distinguish when one is, or is not, intent upon them in a spirit of enmity; and if very near, it is always the eye they watch. So long as you observe them, as it were, from the corner of the eyeball, sideways, or look over their heads at something beyond, it is well. Turn your glance full upon them to get a better view, and they are gone.

"When waiting in a dry ditch with a gun on a warm autumn afternoon for a rabbit to come out, sometimes a bunny will suddenly appear at the mouth of a hole which your knee nearly touches. He stops dead, as if

petrified with astonishment, sitting on his haunches. His full dark eye is on you with a gaze of intense anxiety; his nostrils work as if sniffing; his whiskers move; and every now and then he thumps with his hind legs upon the earth with a low dull thud. This is evidently a sign of great alarm, at the sound of which any other rabbit within hearing instantly disappears in the 'bury.' Yet there your friend sits, and watches you, as if spell-bound, so long as you have the patience neither to move hand or foot nor to turn your eye. Keep your glance on a frond of the fern just beyond him, and he will stay. The instant your eye meets his, or a finger stirs, he plunges out of sight."

Did space permit, we might quote several passages on the habits of wild creatures, which we do not doubt would prove interesting to the readers of this journal. The remarks on the mole (p. 108), on field mice (p. 109), and on weasels hunting in packs (p. 119), seem to have been dictated by a close observation of the habits of these animals and a keen appreciation of the wonderful works of Nature.

The International Dictionary for Naturalists and Sportsmen.
In English, French and German. By EDWIN SIMPSON BAIKIE.
Part I., 8vo, pp. 16 (price one shilling). Trübner & Co.,
Ludgate Hill. 1878.

Many of our countrymen who annually go abroad on shooting and fishing tours must have experienced, not unfrequently, the inutility of dictionaries, which do not afford the German or French equivalents for the numerous technical terms appertaining to their favourite sport. The language of the chase is indeed a language to itself, and needs a special dictionary. Such a work has been designed by Mr. Simpson Baikie, and will contain, in three languages, "the terms used in Hunting, Shooting, Fishing, &c., Natural History, and the Sciences."

The first "part" of sixteen pages is now before us, and extends perhaps half way through the letter B. At this early stage of the work, it would be scarcely fair to the author to express an opinion on its merits; but we do not doubt that when completed it will prove of considerable utility to those for whom it is specially designed.

THE ZOOLOGIST.

THIRD SERIES.

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[No. 22.]

SCIENTIFIC RESEARCH IN THE 17TH CENTURY,
AS EXEMPLIFIED IN THE DIARY OF MR. SAMUEL PEPYS, F.R.S.
BY CLAUDE WEBSTER.

THE readers of the 'Diary of Mr. Samuel Pepys, F.R.S.,' must include pretty well all those who have essayed to make any acquaintance with the ordinary literature of their country; and great no doubt has been the amusement they have derived from their perusal of the confessions of the somewhat sensuous gentleman, who, jotting down day by day the varied incidents of a not uneventful life, scarcely contemplated the ultimate revelation of his sayings and doings, concealed as they were in a caligraphic character so obscure as well nigh to preclude the expectation that they would ever come to light at all.

Samuel Pepys, born in 1632 and dying in 1703, filled several important offices in connection with the Navy, and eventually that of Secretary to the Admiralty, in the reigns of Charles II. and James II., being also a Member of Parliament during a portion of this period. The 'Diary,' commenced in 1659-60, extends down to the year 1669, and was kept throughout in shorthand. It finishes thus characteristically:—

"And thus ends all that I doubt I shall ever be able to do with my own eyes in the keeping of my journall, I being not able to do it any longer, having done now so long as to undo my eyes almost every time that I take a pen in my hand; and therefore, whatever comes of it, I must forbear. . . . And so I betake myself to that course, which is almost as much as to see myself go into my grave; for which, and all the discomforts that will accompany my being blind, the good God prepare me!"

The late Lord Braybrooke, to whom the world is indebted for the 'Diary,' has prefixed a sketch of Pepys' life, in which some stress is laid upon his literary attainments, which had raised him in 1684 to the high station of President of the Royal Society,* and which he held for two years; and at the present time the opinion prevails that Pepys was a much more considerable person than the ordinary reader of the 'Diary' might suppose him to be. How far he merited the character of a man of letters and science, the following extracts, perhaps, will not do much to show. His claims to so exalted a position must rest upon a basis altogether different to that disclosed in the 'Diary.' Be this as it may, it is the purpose of this article to exhibit Pepys as he wrote himself down; firstly, as a reporter of facts pertaining to Natural History and Science, imparted to him in conversations with his acquaintance; and next as a Fellow of the Royal Society, when that now deservedly famous corporation became an established fact. The quaintness, rising almost to simplicity, with which these details are recorded in no respect detracts from their amusing quality.

Commencing, then, with an entry under date September 11th, 1661, we read:—

"To Dr. Williams, who did show me how a dog that he hath do kill all the cats that come thither to kill his pigeons, and do afterwards bury them; and do it with so much care that they shall be quite covered; that if the tip of the tail hangs out, he will take up the cat again, and dig the hole deeper. Which is very strange; and he tells me that he do believe that he hath killed above 100 cats."—Vol. i., p. 219.

Perhaps in the present day the matter-of-fact Society for the Prevention of Cruelty to Animals would have had something to say to Dr. Williams.

On May 23rd, 1661:—"At table I had very good discourse with Mr. Ashmole, wherein he did assure me that frogs and many insects do often fall from the sky ready formed."—Vol. i., p. 202.

It is difficult to say whose credulity is here most to be admired, that of Samuel Pepys or Mr. Ashmole, who, better known as an antiquary and hereafter as founder of the Museum at Oxford bearing his name, had probably strayed away from the strict line of his usual studies.

* Pepys became a Fellow of the Royal Society in 1665, soon after it had received its charter from Charles II.

It is more to the purpose to read, under the same date:—

"To the Rhenish wine-house,* and there Mr. Jonas Moore,† the mathematician, to us, and there he did by discourse make us fully believe that England and France were once the same continent, by very good arguments, and spoke very many things not so much to prove the Scripture false, as that the time therein is not well computed nor understood."—Vol. i., p. 235.

On the 13th January, 1661-2, Pepys would seem to have made acquaintance with what is known as "Rupert's Drops,"‡ the mode of fracture of which is nearly identical with the newly-discovered toughened glass of the present day:—"Mr. Peter did show us the experiment (which I had heard talke of) of the chymicall glasses which break all to dust by breaking off a little small end; which is a great mystery to me."

An astounding fact in Natural History is disclosed in an entry under date February 4th, 1661-2. It is to be feared that Mr. Templer (supposed to have been a clergyman, too) was given to travellers' tales:—

"At noon to my Lord Crewe's, where one Mr. Templer (an ingenious man and a person of honour he seems to be) dined; and discoursing of the nature of serpents, he told us some in the waste places in Lancashire do grow to a great bigness, and do feed upon larkes, which they take thus:—They observe when the lark is soared to the highest, and do crawl till they come to be just underneath them; and there they place themselves with their mouth uppermost, and there, as is conceived, they do eject poyson upon the bird; for the bird do suddenly come down again in its course of a circle, and falls directly into the mouth of the serpent; which is very strange. He is a great traveller; and speaking of the tarantula, he says that all the harvest long (about which times they are most busy) there are fidlers go up and down the fields every where in expectation of being hired by those that are stung."—Vol. i., p. 244.

* This was in Crooked Lane.

† Mr. Jonas Moore (known as one of the most eminent mathematicians of his day, knighted by Charles II., and who died in 1679) was clearly much in advance of his time.

‡ "Rupert's drops" was the name given to a philosophical toy brought to England by Prince Rupert. These are small tadpole-shaped pieces of glass which have been formed by allowing fused glass to drop into water. A blow may be given with impunity to the head of the glass tadpole; but the mere breaking off of the tail causes the whole to fly to dust with a sharp explosion. (*Encyclopædia Britannica*, article "Annealing.")

Of the mode of capture of larks by serpents here so circumstantially described, or of the existence of the serpents themselves which "do grow to a great bigness," it is unsatisfactory to have to state that no record can be found in Baines' exhaustive 'History of the County Palatine and Duchy,' or indeed elsewhere.

Describing the entry into London of the Russian Ambassador (November 27th, 1662), Pepys says:—

"I could not see the Ambassador in his coach; but his attendants in their habits and fur caps very handsome, comely men, and most of them with hawkes upon their fists to present to the King. But, Lord! to see the absurd nature of Englishmen, that cannot forbear laughing and jeering at every thing that looks strange."—Vol. i., p. 343.

Subsequently (on December 29th) Pepys, detailing the ceremonies attendant upon the Ambassador waiting upon the King (Charles II.) and offering the presents he had brought his Majesty, including the hawks before mentioned, adds:—"The King took two or three hawkes upon his fist, having a glove on wrought with gold, given him for the purpose."

We now reach a period in Pepys' career when he becomes more identified with scientific pursuits than the extracts from his 'Diary' already given would warrant the reader entertaining any idea of. In 1664-5 he was elected a Fellow of the Royal Society, a body of which he was destined eventually (in 1684) to become the seventh President. The Royal Society had its origin about the year 1645, in an agreement between some of the most learned men of the day to meet weekly at Gresham College to discourse upon subjects connected with mathematics and natural philosophy. These meetings, owing to the political exigencies of the times, falling into desuetude, were revived in 1660, Gresham College becoming thus the cradle of a Society destined soon to make a considerable name in the scientific world—a name the renown of which has been maintained to the present day. Receiving its first charter from Charles II. in July, 1662, in February, 1664-5, Pepys was elected a Fellow, and he thus refers to the incident on the 15th of that month:—

"With Creed to Gresham College, where I had been by Mr. Povy the last week proposed to be admitted a member, and was this day admitted, by signing a book and being taken by the hand by the President, my Lord Brouncker, and some words of admittance said to me. But it is a most acceptable thing to hear their discourse, and see their experiments; which

were this day on Fire, and how it goes out in a place where the ayre is not free, and sooner out where the air is exhausted, which they showed by an engine on purpose.”—Vol. ii., p. 248.

On March 1st he seems to have paid his admission money, forty shillings, to the Society. On January 9th, just previous to his election, Pepys was present at a meeting at Gresham College, and—

“Saw the Royal Society bring their new book, wherein is nobly writ their charter and laws, and comes to be signed by the Duke* as a Fellow; and all the Fellows’ hands are to be entered there and lie as a monument; and the King hath put his with the word Founder.”—Vol. ii., p. 238.

In what spirit the merry monarch thus inscribed his royal autograph in the Fellows’ book may be well guessed, for in Pepys’ pages do we not read (February 1st, 1663-4) how his Majesty “mightily laughed at Gresham College for spending time only in weighing of air and doing nothing else”? It is perhaps only fair, however, to add here that Bishop Sprat, in his *History of the Society*, says the King evinced “much satisfaction that this enterprise was begun in his reign,” and in various ways displayed interest in the success of the Society thus happily inaugurated. The “new book” is still in use, containing the autograph of every Fellow from the institution of the Society to the present day.

We now from time to time come upon entries in the ‘*Diary*’ referring to papers read before, and the proceedings generally of, the Society, at whose meetings Pepys evidently had become a frequent and zealous attendant. On March 1st, 1664-5, we read:—

“To Gresham College, where Mr. Hooke read a second very curious lecture about the late comet; among other things proving very probably that this is the very same comet that appeared before in the year 1618, and that in such a time probably it will appear again, which is a very new opinion; but all will be in print.”—Vol. ii., p. 253.

The ‘*Philosophical Transactions*,’ by which name the published proceedings of the Royal Society are known, commence on the 6th March, 1664-5, and continue to the present day. By their means the papers and other matters spoken of by Pepys may be traced with tolerable readiness. The “late comet” referred to was the subject of several papers, and will be found described in Mr. Russell Hind’s exhaustive little treatise on those bodies.

* The Duke of York.

The Great Plague of London occurred in 1664, and put an end to all social and other assemblages during its continuance. To his honour be it told that when the metropolis was well-nigh abandoned owing to this scourge, Pepys remained at his post, observing in a letter to Sir William Coventry, "The sickness in general thickens around us. You, sir, took your turn at the sword; I must not, therefore, grudge to take mine at the pestilence."*

On January 22nd, 1665-6, was held—

"The first meeting of Gresham College since the Plague. What among other fine discourse pleased me most, was Sir G. Ent† about Respiration; that it is not to this day known, or concluded on among physicians, nor to be done either, how the action is managed by Nature, or for what use it is."—Vol. ii., p. 357.

Nothing appears, at this date, on the subject of the discourse here alluded to, or in regard to the following, in the 'Philosophical Transactions': they may consequently have been papers read before the College, and not before the Royal Society:—

Feb. 21, 1665-6. "With my Lord Brouncker to Gresham College, the first time after the sickness that I was there, and the second time any met. And here a good lecture of Mr. Hooke's about the trade of felt-making, very pretty."—Vol. ii., p. 367.

Pepys associates now with men of scientific character, and with them holds much "sweet converse." On August 8th, 1666, he—

"Discoursed with Mr. Hooke about the nature of sounds, and he did make me understand the nature of musically sounds made by strings, mighty prettily: and told me that having come to a certain number of vibrations proper to make any tone, he is able to tell how many strokes a fly makes with her wings (those flies that hum in their flying) by the note that it answers to in musique, during their flying. That, I suppose, is a little too much refined; but his discourse in general of sound was mighty fine."—Vol. iii., p. 3.

We wonder what Prof. Tyndall or Lord Rayleigh would have to say to these conclusions. The next "experiment," if made at the present time, would assuredly have subjected all concerned to much objurgation at the hands of the Anti-Vivisection clique. If the operation termed "transfusion of blood" is but little resorted to now-a-days, and has not altogether fulfilled the expectations

* Weld, 'History of the Royal Society,' vol. i., p. 296.

† Sir George Ent, F.R.S., was President of the College of Physicians.

once entertained of it, the record of the earlier experiments in connection with it has not the less interest. On November 11th, 1666, Pepys narrates:—

“Dr. Croone told me, that at the meeting at Gresham College to-night there was a pretty experiment of the blood of one dog let out (till he died) into the body of another on one side, while all his own run out on the other side. The first died upon the place, and the other very well and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but as Dr. Croone says, may if it takes, be of mighty use to man’s health, for the amending of bad blood by borrowing from a better body.”—Vol. iii., p. 85.

On November 16th the result of the experiment is given:—

“This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog’s blood at the College the other day is very well and likely to be so as ever, and doubts not it being found of great use to men; and so do Dr. Whistler, who dined with us at the tavern.”—Vol. iii., p. 87.

What would Mr. John Bright or Archbishops Tait and Thomson say to Mr. Pepys’ thoughtless witticism, which is eminently Palmerstonian in its flavour? The ‘*Philosophical Transactions*,’ in giving the details of the “experiment,” state that though “hitherto look’d upon to be of an almost unsurmountable difficulty, it hath been of late very successfully perform’d, not onely at Oxford by the directions of that expert anatomist, Dr. Lower, but also in London, by order of the R. Society, at their publick meeting in Gresham Colledge.”

The Society soon grew bolder, for the following year found them extending the experiment of transfusion from dogs to mankind. Again let Mr. Pepys be the exponent. On November 21st, 1667, he went—

“With Creed to a tavern, where Dr. Wilkins and others; and good discourse; among the rest, of a man that is a little frantic, that is poor and a debauched man, that the College have hired for 20s. to have some of the blood of a sheep let into his body; and it is to be done on Saturday next. They purpose to let in about 12 oz.; which they compute is what will be let in in a minute’s time by a watch.”—Vol. iii., p. 416.

On November 30th we learn the result, so far, at least as concerns the man “that is a little frantic”; but how about the sheep? Pepys says—

“I was pleased to see the person who had his blood taken out. He speaks well, and did this day give the Society a relation thereof in Latin,

saying that he finds himself much better since and as a new man; but he is cracked a little in his head, tho' he speaks very reasonably and well. He had but 20s. for his suffering it, and is to have the same again tried upon him: the first sound man that ever had it tried on him in England, and but one that we hear of in France."—Vol. iii., p. 420.

The 'Philosophical Transactions' furnish the details of the experiment, stating that it "was perform'd November 23rd, 1667, upon one Mr. Arthur Coga, at Arundel-House, in the presence of many considerable and intelligent persons, by the management of those two Learned Physitians and dextrous Anatomists, Dr. Richard Lower and Dr. Edmund King."

Pepys could not allow the occasion to slip without recording another sample of his treatment of all things, grave or gay:—

"On this occasion Dr. Whistler told a pretty story of Dr. Cayus that built Caius College; that being very old and living only at that time upon woman's milk, he while he fed upon the milk of an angry fretful woman was so himself; and then being advised to take it of a good natured patient woman, he did become so beyond the common temper of his age."—Vol. iii., p. 417.

Coming events were casting their shadows before, for we now read, November 30th, 1667:—

"To Arundel House, to the election of officers for the next year; when I was near being chosen of the Council, but am glad I was not, for I could not have attended, though above all things I could wish it; and do take it as a mighty respect to have been named there."—Vol. iv., p. 278.

Shortly after this, however, he was elected into the Council, on which he often served, and in 1684 was chosen President, and filled the office for two years.*

Pepys' increasing importance was not without its disadvantages. We have read already how forty shillings sufficed to secure his admission to the Society, in whose welfare and advancement he thencefrom took so considerable an interest. It is not without

* A curious usage is referred to on this head (November 20th, 1668):—"Mr. Povy, Creed and I, to Arundell House, and there I did see them choosing their Council, it being St. Andrew's-day; and I had his cross set on my hat, as the rest had, and cest me 2s." The annual meeting of the Royal Society is still held on that day, as indeed is prescribed by the first Charter. Weld, in his 'History of the Royal Society,' says St. Andrew was "the patron saint of the Society, in whose honour the Fellows of the Society were accustomed, at the early anniversary meetings, to wear a St. Andrew's cross in their hats."

wincing, nevertheless, that he records the following (April 2nd, 1668):—

“With Lord Brouncker to the Royall Society, where they had just done; but there I was forced to subscribe to the building of a College, and did give £40; and several others did subscribe, some greater and some less sums; but several I saw hang off; and I doubt it will spoil the Society, for it breeds faction and ill will, and becomes burdensome to some that cannot, or would not, do it. Here, to my great content, I did try the use of the Otacoustion,* which was only a great glass bottle broke at the bottom, putting the neck to my eare, and there I did plainly hear the dancing of the oares of the boats in the Thames to Arundel gallery window, which without it I could not in the least do, and may, I believe, be improved to a great height, which I am mighty glad of.”—Vol. iv., p. 409.

As regards the proposed College, for the building of which in Arundel Gardens Sir Christopher Wren contributed a design, it may as well be stated that in consequence of legal difficulties, and still more of a want of funds, it was never built.† Mr. Pepys consequently, let us hope, saved his money.

Our jottings from the ‘Diary’ must now perforce come to an end, for though Pepys’ notes continue to be made for a couple of years more,—when the failure of his eyesight, already so touchingly referred to, compelled his forbearance,—there is little or nothing to claim attention in the special direction dealt with in this paper. With the following graphic account of the visit paid by a great lady of the period to a meeting of the Royal Society, and of the honourable reception there accorded her (under date May 30, 1667), this selection of Pepysiana may be fitly brought to a close:—

“After dinner I walked to Arundell House, the way very dusty; where I find very much company, in expectation of the Duchesse of Newcastle, who had desired to be invited to the Society; and was; after much debate *pro* and *con*, it seems many being against it; and we do believe the town will be full of ballads of it. Anon comes the Duchesse with her women attending her; among others the F'erabosco, of whom so much talk is that her lady would bid her show her face and kill the gallants. She is indeed black, and hath good black little eyes, but otherwise a very ordinary woman I do think, but they say sings well. The Duchesse hath been a good comely woman; but her dress so antick, and her deportment so ordinary,

* An instrument to facilitate hearing. No allusion to this can be found in the ‘Philosophical Transactions.’

† Weld, ‘History of the Royal Society,’ vol. i., pp. 211—214.

that I do not like her at all, nor did I hear her say anything that was worth hearing, but that she was full of admiration, all admiration. Several fine experiments were shown her of colours, loadstones, microscopes, and of liquors; among others, of one that did while she was there turn a piece of roasted mutton into pure blood, which was very rare. After they had shown her many experiments, and she cried still she was full of admiration, she departed, being led out and in by several Lords that were there; among others, Lord George Barkeley and Earl of Carlisle, and a very pretty young man, the Duke of Somerset."—Vol. iii., p. 229.

John Evelyn, in his *Diary*,* thus alludes to this visit:—

"To London to wait on the Duchess of Newcastle (who was a mighty pretender of learning, poetrie, and philosophie, and had in both publish'd divers bookes) to the Royal Society, whither she came in greate pomp, and being receiv'd by our Lord President at the dore of our meeting roome, the mace, &c., carried before him, had several experiments showed to her. I conducted her Grace to her coach, and return'd home."

Some account of this remarkable woman, of whom so little is now known, may not be unacceptable. Margaret, the second wife of William Cavendish, first Duke of Newcastle (one of the most able generals and distinguished patriots of the times of Charles I. and II.), was born about the end of the reign of James I., married the Duke (then Marquis) of Newcastle in 1645, and died in 1673. Walpole† furnishes a notice of the Duchess' numerous works, which he states "fill many folios"; and Granger‡ says, "If her merit as an author were to be estimated from the quantity of her works, she would have the precedence of all female writers ancient or modern. There are no less than thirteen folios of her writing, ten of which are in print: they consist chiefly of poems and plays." Dr. Birch§ gives us a list of the "fine experiments" provided for the Duchess' delectation:—

"The Duchess of Newcastle coming in, the experiments appointed for her entertainment were made:—First, that of weighing the air, which was done with a glass receiver of the capacity of nine gallons and three pints, which being exhausted and put into a scale and then opened and the air let in weighed thereupon one ounce and seventy-one carats more than it did when exhausted. Next were made several experiments of mixing colours. Then two cold liquors by mixture made hot. Then the experiment of making water bubble up in the rarefying engine by drawing out the air.

* 'Memoirs,' vol. i., p. 404.

+ 'Royal and Noble Authors,' vol. iii., p. 145.

† 'Biographical History of England,' vol. v., p. 263.

§ 'History of the Royal Society,' vol. ii., p. 177.

And that of making an empty bladder swell in the same engine. Then the experiment of making a body swim in the middle of the water. And that of two well-wrought marbles which were not separated but by the weight of forty-seven pounds."

No mention being made here of the "one which did while she was there turn a piece of roasted mutton into pure blood," we are left to conjecture entirely as to the nature of this experiment, which Pepys correctly designated as "very rare."

The frequent references in the 'Diary' to Pepys' visits to taverns invites attention to the probable origin of the Royal Society Club being traceable to these social assemblages held usually after the meetings of the Society had broken up. For example, under date February 15th, 1664-5:—

"After this being done, they to the Crown Tavern behind the 'Change, and there my Lord* and most of the company to a club supper. Sir P. Neale, Sir R. Murrey, Dr. Clerke, Dr. Whistler, Dr. Goddard, and others, of the most eminent worth. Above all, Mr. Boyle was at the meeting, and above him Mr. Hooke, who is the most, and promises the least, of any man in the world that ever I saw. Here excellent discourse till ten at night, and then home."—Vol. ii., p. 248.

And again (June 4th, 1666), "To the Crown, behind the 'Change, and there supped at the Club with my Lord Brouncker, Sir G. Ent, and others of Gresham College."

Weld* says the Royal Society Club was founded in 1743, under the designation of the "Club of the Royal Philosophers," and bases this statement, apparently, on the fact of the original "Rules and Orders to be observed by the Thursday's Club called the Royal Philosophers" bearing date October 27th, 1743.

The late Admiral William Henry Smyth, however, in his amusing 'Sketch of the Rise and Progress of the Royal Society Club,' privately printed in 1860, observes (p. 10):—"Though the commencement of the oldest minute-book which has descended to us is assumed as the date of establishment, it would appear, both from circumstance and tradition, that the Club was certainly in existence before the year 1743." This supposition of the gallant Admiral is abundantly borne out by the 'Diary,' which proves, indeed, that the existence of the "Club" was about coincident with the establishment of the "Society."

* Lord Brouncker.

+ 'Hist. Royal Soc., vol. i., p. 491.

NOTES FROM AN ARCTIC JOURNAL.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

(Continued from p. 320.)

ON anchoring in the harbour of Godhavn (called Lieveby by the English whalers) we found that H.M.S. 'Valorous' had preceded us; and shortly afterwards our consort, the 'Discovery,' came in, and anchored alongside. The following week was occupied in transferring supplies from the 'Valorous' to the two ships forming the Expedition; and the opportunity afforded by this delay of making myself acquainted with the neighbourhood was utilised as much as circumstances permitted.

The district of Godhavn comprises the southern and western shores of Disco Island and the Kronprins Island (Whalefish Island), in Disco Bay. In 1870 the number of inhabitants was two hundred and forty-five, of whom one hundred and thirteen belong to the settlement of Godhavn, which is built upon a low, ice-polished peninsula of gneiss, and forms the eastern side of the excellent harbour. It is the residence of the inspector of the northern districts of Danish Greenland, and, owing to the accessibility of the port, has been a favourite rendezvous of Arctic Expeditions. Some of the Scotch whaling-fleet, proceeding to the Lancaster Sound fishery, annually make a point of calling at Godhavn on the way north; so that in addition to the two mails forwarded by the regular trading brigs from Copenhagen, the Danish officials at Godhavn receive an extra budget of news by the Dundee steam-whalers. It was very gratifying to find that Mr. Krärup Smith, the intelligent inspector of North Greenland, took great interest in the Natural History of his extensive domain. Though overburdened by the duties of his office, and the immense amount of extra labour thrown on him by the arrival of our Expedition, he arranged a visit for us to the cliffs of Uifvak, and with great generosity allowed me to select a very considerable portion of his archæological collection, which on our return to England was deposited in the British Museum.

The Danish residents in the Greenland settlements live in good wooden houses, the timber of which they are built having been brought from Europe. The houses of the natives at Godhavn are considerably modified from the original type of native "igloo;"

instead of being mere huts of stone and earth, approached by a subterranean passage, many have wooden fronts, glass windows, and excellent sleeping accommodation inside. I was much pleased with the general cleanliness and hospitality of the Greenlanders. The great admixture of European blood amongst the inhabitants of Godhavn at once attracts attention; I was struck to see light-haired, blue-eyed boys, of thoroughly Danish expression, paddling in the native kajaks, and dressed after the manner of the country, and talking the Eskimo language. These are the progeny or descendants of the Danish *employés* who have married Greenland women. Some of the young unmarried women were, I thought, remarkably pretty, and their dress extremely becoming. The married women, engrossed with household cares, as a rule, soon lose all interest in their dress, and become slovenly and careworn: they soon age and get wrinkled. The fashion of wearing the hair tightly drawn together in a top-knot is very injurious; it causes the hair to fall off in patches on the side of the head, and the expression of the face is altered. The Greenlanders are strictly moral, and their behaviour bears favourable comparison with far more favoured races. Syphilis was unknown in Greenland, until introduced of late years into the district of Frederikshaab, following the increased intercourse with foreigners, consequent on the working of the cryolite mine at Ivigtut.

On the opposite side of the harbour to the settlement of Godhavn a very accessible valley, called the Lyngmarken, leads the traveller up to the base of the basalt precipices, which there rest upon the gneiss; a more difficult path from thence conducts a person to the highlands of Disco Island. Accompanied by a friend we made the ascent one morning. The entire valley of the Lyngmarken being bare of snow, we walked through a copse of willow reaching above our knees. Lapland and Snow Buntings, with a single Ptarmigan, *Lagopus rupestris*, were the only birds we met with. The alpine plants were blooming in all their freshness; it was curious to notice that the blossoming of these plants appeared to keep pace with the retreat of the snow, and just as soon as the snow dissolved the flowers appeared. When we reached the junction of the gneiss and trap beds we took advantage of a torrent-course to aid our ascent. At an elevation of about 1000 feet the mountain torrent commences to cut out a vast *cirque* in the soft traps. The mountain side has been scooped out

into an amphitheatre, with perpendicular walls, at least four hundred feet in height. The bottom of the *cirque* was filled with snow, under which the cascade disappeared. Passing above the *cirque* and keeping to the left bank of the stream we gained the highland without much difficulty, our aneroids giving an elevation of 2400 feet; the view looking eastward over the settlement of Godhavn was remarkably beautiful, islands in Disco Bay, though fourteen miles distant, seemed to be directly beneath us; the opposite shores of Greenland were distinctly visible, the great Jakobshavn glacier shone out under the brilliant sunshine, whilst a vast number of icebergs were scattered over Disco Bay. A little beyond this spot we crossed the snow-line, losing sight of the sea. The snow was very soft, and we sunk over our knees: an unbroken line of snow seemed to stretch with a gradual rise into the interior; whether we were walking over a glacier or not, we could not determine, from the depth of the snow. After struggling on for two hours our aneroids gave an elevation of 2600 feet. We then retraced our steps. After reaching the snow-line no trace of animal life was observed, except the foot-prints of a hare.

An excursion made to Uivak, being our first introduction to camp- and boat-life in Greenland, and moreover having given us an opportunity of observing the more common birds of the sea-coast around Disco, may perhaps not be out of place. Leaving Godhavn in a whale-boat we stopped at Fortune Bay harbour, some four miles to the westward, and prepared supper. The islets which form Fortune Bay consist of rounded masses of gneiss, the result of ice-action: the tops of the islets in some places are distinctly furrowed; the little valleys lying between the polished knolls are choked with rounded boulders, now moss and lichen covered. Veins of syenite in some places traverse the gneiss. Traces of old dwellings, marked by the fertility and rich green of the turf, are to be found in sheltered nooks. Hundreds of "dovekies," or Black Guillemots, were swimming round the shores; we shot several for our supper, and obtained more than a dozen of their fresh eggs from chinks in the rocks. A Lapland Bunting was found nesting, and a Snow Bunting had young nearly ready to fly. After pulling at the oars all through the night we reached Uivak, distant some twenty miles from Godhavn. Landing there is somewhat difficult in fine weather, and when there is any swell on quite out of the question.

Where we reached the shore, the horizontal bedded basalt cliffs rose frowning overhead to a height of a thousand feet; they are much serrated on their upper edge by the action of water and weather, and though, when viewed from a distance, the cliffs appear to be mural, on a closer acquaintance it is seen that they are fretted into most fantastic shapes; pillars, needles, and blocks of trap stand out in relief against the cliffs. A talus with a very steep slope extends from the beach to a height of about three hundred feet. This talus is removed between low- and high-water marks by the sea; but on this cleared space many large ice-transported erratics were strewn. The two Greenlanders who accompanied us, one of whom had informed Mr. Krärup Smith that in the preceding year he had observed an "iron-stone" similar in appearance to those taken away by the Swedes, led me to the spot: the waves were breaking somewhat; but I satisfied myself that no iron-masses were lying amongst the boulders for some yards to seaward.* Considerable interest has been excited both in England and the Continent as to the origin of these iron-masses of Uivfak, whether they be meteoric or telluric. Without presuming to hazard any decided opinion on the subject, it may be well to mention that, even with an ordinary lens pieces of basalt, apparently similar to the rock of Uivfak, are to be detected in the body of these lumps of iron: this militates against the argument of their meteoric origin. The re-occurrence of pieces of iron-stone at the same place makes it more than probable that the matrix of the iron is in the cliffs overhead.

On our return journey to Godhavn we landed at Laxebugt, where there is a considerable indentation on the coast. Between the cliffs and the bay stretches an extent of flat land, which reaches to the head of the bay. The present sea-level is some twenty feet below this border of old sea-shore. A considerable stream, formed by the melting of the snow on the uplands, empties into Laxebugt, near its western extremity; rounded boulders of gneiss are abundant in the bed of the stream. As boulders of gneiss are likewise scattered over the flat land surrounding the bay, and were probably floated there on ice when the land lay below the present sea-level, I walked up to the spot where the torrent debouches from the cliffs, and con-

* In the following year, 1876, Mr. Krärup Smith obtained a large mass of native iron from this same spot, and several smaller pieces: they were picked up at the water's edge.

vinced myself that in any case a good deal of the gneiss was washed down from the interior; therefore this torrent must either cut down to a formation of gneiss, or else the snow-covered uplands of Disco Island are strewn over with ice-transported blocks, that during the summer thaws work down into the stream. Our return track led us amidst a great number of bergs: some of these ice-islands were over a hundred feet above water, and as they were frequently "calving" we kept at a respectful distance from them. The first notice given of disruption was seeing the flocks of sea-gulls that had been resting on the iceberg rise hurriedly in the air; then a mass of ice slid into the sea, making a great turmoil in the waters, followed by a loud report. The newly exposed portion of the berg was at once enveloped in mist, owing to its being so much colder than the air with which it suddenly came in contact. If the detached mass of ice is of sufficient size to upset the equilibrium of the berg the sight is still grander: the enormous mass slowly moves; the side that is rising pours from off its flanks volumes of water that descend in enormous cataracts of foam. This movement of the iceberg back and forwards is slow, but exceedingly grand; the oscillations of the enormous mass continuing for half an hour before the berg attains its new position of poise and rest in the sea.

During this excursion I noticed the following species of birds:—*Plectrophanes lapponicus*, breeding at Fortune Bay; *P. nivalis*, common, and breeding wherever we landed; a single pair of *Corvus corax*, in the cliffs of Laxebught; *Larus glaucus*, common, also breeding in the cliffs near Laxebught, the spot being called "Nargavak," after the Greenlandic name of the bird, which word gives a very faithful representation of its note; *L. leucopterus*, common; a few pairs of *Stercorarius crepidatus*; *Fulmarus glacialis*, very abundant: the natives give the name of "Igarsok" to the dark-coloured birds, which I was informed by Mr. Fencker, of Godhavn, means cook, that functionary on board the Danish trade-vessels usually dressing in a blue jersey, whence the derivation of the name. *Uria grylle* was very abundant: amongst hundreds that I saw in the vicinity of Fortune Bay was one completely black, the white spot on the scapulars not showing. *Alca brunnichi* abundant; but *A. torda* scarce in comparison. Small flocks of *Harelda glacialis* were met with, and some numbers of *Somateria mollissima*, the most numerous duck being *S. spectabilis*;

all the eiders shot on this trip belonged to this species. They usually flew in flocks, in a course parallel with the coast. The six or eight examples we procured were males. I observed one flock containing more than fifty individuals; the bright-coloured males predominated, and the remainder were in all probability immature birds of the same sex. Mr. Fencker assured me that none of this species nested in the vicinity of Godhavn, some small islands in Disco Fiord being the nearest breeding place with which he was acquainted. The natives do not discriminate between the females of the two species of Eider Ducks, consequently well-authenticated eggs of the King Eider are difficult to procure from Greenland. On a small lake, not far from Godhavn, a few Red-necked Phalaropes were breeding. This list about exhausts the number of species of birds that I observed at the island of Disco.

Englishman's Bay, just beyond the harbour of Godhavn, is an excellent locality for the plant-collector. We visited that spot on several occasions: a bed of *Mertensia maritima* in full bloom, growing on the beach, was very attractive; *Archangelica officinalis* grew there abundantly; at the roots of a fern a small snail, *Vitrina angelica* var. *pellucida*, was rather common. The only drawbacks to our enjoyment on shore were the attacks of mosquitoes, large striped insects, which alighted on one without any humming or note of warning.

At Godhavn we obtained some twenty-four dogs for sledging purposes. The dog of the Eskimos is undoubtedly a semi-domesticated wolf;* and in all probability accompanied that people from America in their migration to Greenland. In the Danish settlements some of these animals show traces of having been crossed with Newfoundland or Labrador dogs; but the genuine wolf-type largely predominates. As I was destined in the future to become better acquainted with these valuable assistants, when toiling along with them over the rugged floes of the far north, I shall defer giving an account of them until a later period of the voyage.

On July 15th we left Godhavn, and proceeded to the settlement of Ritenbenk, likewise the name of the district which occupies both sides of the Waigatt Strait. The settlement of Ritenbenk contains a population of about one hundred souls. On our passage

* Dr. Robert Brown considers the progenitor of the Arctic Dog to have been *Canis occidentalis* var. *griseo-alba* (Proc. Zool. Soc., May, 1868).

to this port we passed close to a superb iceberg: it had a lofty arch piercing its very centre, through which shone the warm colours of the midnight sun. This iceberg, at least two hundred feet out of the water, was streaked with saphirine-blue, and close to the water's edge with vivid green; hundreds of Fulmars, and many Arctic Terns, were perched on it. As the 'Valorous,' following us, showed through the crystal arch the effect was magnificent. On shore at Ritenbenk we found young Wheatears, Lapland Buntings, and Snow Buntings, able to fly; the young Ptarmigans, *L. rupestris*, were following their parents. The crops of these newly-hatched birds contained blossoms of *Vaccinium uliginosum*, and the young buds of *Cassiope tetragona*.

A party from our ships visited a breeding place of sea-fowl, on Arveprins Island, for the purpose of obtaining a supply of fresh meat: a large number of *Alca brunnichi* and *A. torda*, a Glaucus Gull, two Kittiwakes, two King Eiders, and a common Eider, were brought back by the gunners. A young Cormorant, *Phalacrocorax carbo*, with only one wing developed, was taken from its nest: the head of the humerus was rounded, and there was an entire absence of radius and ulna; the bird was nearly as large as an adult, and well nourished; its stomach contained four ounces of gneiss pebbles. One of the Razorbills had its hatching-spot on the side under the wing, and not on the belly, as usual: this bird during incubation must have lain on its side.

On Arveprins Island we came on a deserted burial ground: the tombs, some twenty in number, had been originally built with blocks of gneiss, covered over with slabs of the same material; all had fallen down. These tombs had been raised over the corpse, the rocky nature of the ground having prevented the digging of a grave. The few fragments of human bones left lay on the surface of the rock: no implements of any kind were to be found.

At Ritenbenk we parted company with the 'Valorous,' and said good-bye with regret to our kind friends. During my stay at Godhavn I had the opportunity of sharing in some dredging operations, under the guidance of Dr. Gwyn Jeffreys, who, to complete his personal acquaintance with the fauna of the northern seas, had undertaken the long and trying voyage to Greenland, on board the 'Valorous.*' Here, also, we had to say adieu to

* The biological results of this cruise, by Dr. J. Gwyn Jeffreys, F.R.S., are published in the Proc. Roy. Soc., 1876.

Mr. Clements Markham, who had accompanied the Expedition thus far on board the 'Alert.' It was no ordinary leave-taking, for to Mr. Markham's earnest advocacy of a renewal of Arctic enterprise the despatch of the Expedition was in a great measure due. An Arctic traveller himself, having graduated in the school of the Franklin Search Expeditions twenty-five years before, he added practical experience to his vast stores of knowledge, which were at all times available for the information and benefit of his companions. Our parting with one who sympathised so warmly in all our hopes and aspirations was severing the last link in the chain that connected us with home.

On July 17th we passed down the Waigatt Strait, through streams of bergs discharged from the Torsukatak ice-fiord. The scenery of the Waigatt is very fine; on the Nugsuak side the trap-cliffs rise to a height of from 3000 to 4000 feet. The same formation forms the coast-line as far as Proven, in lat. $72^{\circ} 22' N.$, which we reached on the night of the 19th. This settlement is built on a small island composed of gneiss, its highest point reaching an elevation of about 600 feet. The surface of the island is strewn over with erratic blocks, chiefly metamorphic; some of them are of enormous size, and are poised on very insecure foundations, many of them giving the idea that they would topple over with but little encouragement. On the extreme summit of the island are lying several masses of basalt, with the edges of the columns little worn by attrition; in all probability these blocks were drifted to their present position by the agency of floating ice, in which case this portion of the Greenlandic coast must have experienced great elevation since the deposition of the Miocene traps and basalts. At an elevation of over 1000 feet on Arveprins Island, Mr. Markham and I observed the same deposition of basaltic erratics on its ice-worn slopes. We noticed a considerable falling off in the abundance of the flora at Proven in comparison with the Island of Disco; bird-life was very scant—a single Raven, many family parties of Snow Buntings, a few Wheatears with their newly-fledged young, and a Glaucous Gull, made up the list. The sea, however, was more prolific in life: a small dredge, let down in thirteen and a half fathoms, brought up many Mollusca, Star-fishes, and Crustaceans. By dipping buckets, we captured hundreds of *Clio borealis* and *Limacina arctica*; when the two species were placed in the

same vessel the *Clios* eagerly devoured the *Limacina*. I noticed, on Proven Island, that a perpendicular exposed surface of gneiss rock was studded with globular cavities, varying in size from an apple to circular holes one or two feet in diameter: if ever they had contained any substance it must have been of a softer consistency than the matrix, as the perforations opening into these holes did not equal the largest diameter of the cavities.

Leaving Proven on July 21st we sailed for Upernivik. The coast-line between these two points is magnificently grand; cliffs of 1000 to 1200 feet rising sheer from the water's edge,—a gorgeous colouring of rock and crag, backed by the inland snow, with glaciers showing from the inlets,—formed a scene of indescrivable beauty. Early on the following morning we were abreast of Sanderson's Hope, the western face of the Island of Karsorsuak, which rears its mist-capped summit some 3500 feet above the level of the sea. The cliffs of Sanderson's Hope appear at a little distance to be perfectly smooth faces of rock, over 1000 feet in height; but on a nearer approach ledges can be traced across its front, on which were innumerable sea-fowl—these were the *Alca brunnichi*, or loom; and Sanderson's Hope is one of the most noted breeding places of this species on the coast of Greenland. Being desirous of obtaining a supply of birds the boats were put out, and a numerous party of eager gunners proceeded to the "loomery." There was a considerable swell on, which made it difficult to take correct aim; and after an hour's gunning only one hundred and twenty-two Guillemots rewarded our united exertions. Amongst the dead birds I did not find a single *A. tarda*; nor did I recognise one of that species amongst the thousands upon thousands that flew above my head. The most northern range of the Razorbill, as far as I am aware, is Ritenbenk, where we found it, as already mentioned, breeding in considerable numbers. When we fired at the birds huddled together on the ledges, dozens of eggs were knocked into the sea as the owners took wing: these eggs contained young ready to hatch. Several pairs of Glaucous Gulls that were breeding high up on the cliffs remained on their nests calmly gazing on the havoc below, their mates every now and again swooping on the deserted ledges and carrying off an egg. With considerable trouble Captain Markham managed to land me on the cliffs, and bootless and coatless I crawled to some of the ledges of red

gneiss, along which the eggs were deposited. The eggs of Brünnich's Guillemot show quite as much variation in colour as those of *Alca troile*, and are quite as beautiful. To get back into the boat, rising and falling with the heavy swell, and to preserve the eggs from destruction, was a more difficult feat than landing. Holding the red silk handkerchief which contained the plunder, firmly between my teeth, I jumped blindly into the arms of the sailors, who caught me as they would a bale of goods. As good luck would have it not one of the eggs was cracked. We dropped anchor in the harbour of Upernivik the same day. This settlement, situated in lat. 72° 48' N., is placed upon a small island: the inhabitants number under a hundred souls. The governor and missionary live in comfortable wooden houses; and there is a small, but neat, church. The huts of the natives are inferior to those at Godhavn, and so is the general appearance of the natives. Upernivik is certainly a most dreary looking spot: facing the open sea it is directly exposed to its winds and fogs; in winter the sun is below the horizon for seventy-nine days; and yet we found the Danish governor and his amiable wife seemingly cheery and contented with their lot. Some of the Dundee whalers had called at Upernivik a month before our arrival, so that Governor Fliescher and his wife were not very far behind us in European news. On landing I walked to the top of the island, which was nearly bare of snow, and some four hundred feet in height; the surface of the rock on its extreme summit showed ice-scratchings; the entire island is strewn with erratic blocks. I observed a pair of *Ægialitis hiaticula*, and several Snow Buntings. The flora appeared very scanty in comparison with Disco, but *Ranunculus pygmæus* grew abundantly in swampy spots near the settlement, and the diminutive *Betula nana* reaches the top of the island. The natives stretch the seal-skins in front of their "igloos," and fasten them down by means of a great number of bone pegs, chiefly snapped off pieces of seal's ribs; then the women set to work with the scrapers, now made of iron and imported from Denmark, and remove the adherent blubber from the skin. The bone pegs are similar to those I have found in the coast-middens of the west of Scotland; and I have no doubt they had been used for the same purpose. I was much struck with the intelligence of two young children that followed us: when they saw that we were interested in insects and plants they led us to the most likely spots, and drew our attention to some freshwater Crustacea; for every

object they appeared to have a proper name, which they repeated to us several times with considerable animation.

On the evening of July 22nd we left Upernivik. Steering northwards along the Greenland coast, during a dense fog, we grounded for a short time on the Island of Kangitok; this gave us an opportunity to land. Eider Duck's nests were very numerous on the island, but evidently they had been recently robbed, for I did not find one containing eggs. Others of our party were more fortunate, and killed females of both species from off the nests; but owing to their inability, at this period of the voyage, to recognise the difference between the females, the eggs were not satisfactorily identified,—rather to my regret, as well authenticated eggs of *Somateria spectabilis* are not common in collections.

In order to cross Melville Bay, the bugbear of Arctic voyagers in the days of sailing vessels, two courses are possible: one is to keep moving along the land-ice, and, in the event of the pack moving in shore and endangering the ship, cutting docks into the fixed ice, and thus obtaining shelter; the other, to strike boldly into the "Middle Ice," trusting to the winds and other favourable circumstances to open up navigable lanes of water. The latter plan was adopted by Captain Nares; and, aided by very propitious circumstances, thirty-four hours after entering the pack we had left the "Middle Ice" behind us, and emerged into the "North Water" of Baffin Bay. Though eminently successful in this instance, considerable risk is involved by attempting a passage through the "Middle Ice;" and the fate of M'Clintock and his companions, in the 'Fox,'—who, entrapped in Melville Bay, drifted to the southward with the floating ice,—will be remembered by many of my readers. Their dreary and dangerous imprisonment lasted from August till the end of April in the following year, during which time they drifted south nearly twelve degrees of latitude. Our passage, on the contrary, was marked by brilliant weather; the immense fields of apparently smooth ice stretched away on every side, showing no sign of motion; the intense white was only relieved by the lanes of water, which here and there separated the floes: it was indeed a perfect picture of calm and repose, almost unbroken by the appearance of birds or other animals. By mid-day of July 25th we had fairly cleared the pack, and were steering for the high land in the vicinity of Cape York. Myriads of Little Auks swarmed around us, busily employed fishing for *Entomostraca*, flocks of them diving just in time to avoid the ship's

stem. These birds use their wings vigorously to propel themselves under water. It was observable that the individuals in a diving flock kept their relative distances and bearings under water with as much correctness as if on the wing, and all returned to the surface within a second of one another. During the breeding season the pouch-like enlargement of the cheeks gives them a singular appearance. The contents of the cheeks is a reddish coloured substance, which on closer examination is found to consist of immense numbers of minute Crustacea. The adaptation of the mouth in this species, as a receptacle for the food required for their young, does not appear to have attracted much attention among naturalists; and yet a little consideration would have shown that some such arrangement must be required. With fish-feeders, such as *Alca*, *Uria*, and *Fratercula*, no difficulty arises in transporting food to their young; but in the case of *Mergulus alle*, which I believe subsists entirely on minute Crustacea, the bill is manifestly incapable of conveying the requisite amount of food, especially as very often the breeding places of the Little Auk are found inland, at considerable distances from the sea. This bird does not appear to be possessed of great powers of flight, or capable of making head-way against a gale: this will account for its having often been picked up in an exhausted condition far inland. In autumn Little Auks were migrating southwards in immense numbers from Davis Strait: probably these flocks were bound for the Labrador and Newfoundland coasts, for I did not observe them later on during that voyage in the Atlantic to the eastward of the longitude of Cape Farewell.

The Cary Islands were reached on July 27th. As it was determined to land a depôt of provisions on the south-eastern island of the group, we had an opportunity for a run on shore. Eider Ducks, with their young, Little Auks, Dovekies, and a colony of Glaucous Gulls, which latter nested on a steep cliff, were all the species of birds met with. The ascent to the breeding place of these Gulls was somewhat difficult: the ledges were covered with the ordure and castings of the birds, and the remains of Little Auks. The old Gulls, numbering some twenty pairs, attacked me vigorously, their boldness and cries increasing when the ledge was reached, on which about a dozen young Gulls were running about. Seizing a couple of young birds by their necks I attempted to descend; but they were so vigorous, and used their feet and wings with such force, that it was necessary to let one go, to avoid

the likelihood of losing my foothold. These voracious young birds vomited a quantity of half-digested remains of Little Auks, and cried piteously. In the young Glaucous Gull the iris is dark blue, gape pink; colour of the bill ashy grey, with horn-coloured tip; legs and feet livid flesh-colour. In the adult the iris is straw-colour; eyelid thick and fleshy, and a bright gamboge-yellow; bill gamboge-yellow; spot on lower mandible deep orange, inclining to vermilion; size of spot varying greatly amongst different examples, as does the size of bill. The feet of adults vary in colour from dull flesh to yellowish pink. Many egg-shells of *Uria grylle* were lying amongst the offal at the breeding place of the Gulls: these must have been originally deposited in exposed situations, otherwise the Gulls could not have secured them. The gneiss rock, of which the island is formed, was covered in many places with lichens of great luxuriance. Flowering plants were not numerous. I saw a few tufts of scurvy-grass, but it did not grow in sufficient quantities to gather for use. A considerable breeding place of Brünnich's Guillemot exists on the north-western island of the group; and in August, 1851, a party from H.M.S. 'Assistance' obtained there a bag of nine hundred looms, dovebies, and roches. During this visit Mr. Clements Markham, then a midshipman in H.M.S. 'Assistance,' observed several ancient remains of Eskimo, consisting of stone huts, cachés, graves, and a fox-trap built of stones. The occupation of these islands by the Eskimo is a matter of considerable interest; for unless these ancient inhabitants used the "kayak" and "oomiak" it is difficult to imagine how they arrived there, the Cary Islands being situated at a considerable distance from land in the great Polynia, usually called the "North Water" of Baffin Bay, and which is probably never completely frozen over, even in the spring or winter. I observed traces of foxes on the south-eastern island; and that, taken in connection with the ancient fox-trap, noticed by Mr. Clements Markham, raises the question how those animals can possibly exist on small rocky islands through the long winter, during which time the migratory birds are absent. The Glaucous Gulls having selected their breeding place on the steepest cliff, doubtless arose from fear of depredations by foxes. The Cary Islands show traces of recent elevation, for, on the summit of the one we visited, rounded and drifted fragments of sandstone and other erratics are abundant.

(To be continued.)

PROVINCIAL NAMES OF BRITISH ANIMALS.

Ireland.—It may interest your readers to glance through the annexed list of names by which our familiar birds are known in Ireland:—

Peregrine Falcon. <i>Blue Hawk</i> .	Meadow Pipit. <i>Titlark</i> .
Kestrel. <i>Windhover</i> .	Rock Pipit. <i>Rock Lark</i> .
Common Buzzard. <i>Kite</i> ; <i>Goshawk</i> .	Creeper. <i>Woodpecker</i> .
Marsh Harrier. <i>Kite</i> ; <i>Brown Hawk</i> .	Ring Dove. <i>Woodquest</i> .
Short-eared Owl. <i>Woodcock Owl</i> .	Common Heron. <i>Crane</i> .
Water Ouzel. <i>Dipper</i> ; <i>Kingfisher</i> ; <i>River Pie</i> .	Curlew. <i>Whaup</i> .
Missel Thrush. <i>Jay</i> ; <i>Big Felt</i> .	Whimbrel. <i>Maybird</i> .
Redwing. <i>Felt</i> .	Common Snipe. <i>Heather-bleat</i> .
Fieldfare. <i>Blue Felt</i> .	Redshank. <i>Red-legged Snipe</i> .
Ring Ouzel. <i>Cowboy</i> ; <i>Mountain</i> <i>Stare</i> .	Common Sandpiper. <i>Sand Lark</i> .
Wheatear. <i>Stoneychat</i> .	Dunlin. <i>Sea Snipe</i> ; <i>Sea Lark</i> .
Stonechat. <i>Blackcap</i> .	Turnstone. <i>Sea Lark</i> .
Willow Warbler. <i>Sallypicker</i> ; <i>Golden</i> <i>Wren</i> .	Lapwing. <i>Phillipene</i> .
Chiffchaff. <i>Sallypicker</i> .	Bald Coot. <i>Black Diver</i> .
Sedge Warbler. <i>Irish Nightingale</i> ; <i>Sallypicker</i> .	Brent Goose. <i>Barnacle</i> .
Great Tit. <i>Blackcap</i> ; <i>Oxeye</i> .	Shieldrake. <i>Burrow Duck</i> .
Blue Tit. <i>Tomtit</i> .	Pintail. <i>Sea Pheasant</i> ; <i>Ladybird</i> .
Hedgesparrow. <i>Reefonge</i> (?)	Widgeon. <i>Whistler</i> .
Hooded Crow. <i>Scald Crow</i> ; <i>Praheen</i> <i>Clark</i> (or "Hen Crow," from its plunder of eggs).	Smew. <i>White-nun</i> ; <i>Magpie Diver</i> .
Greenfinch. <i>Green Linnet</i> .	Red-throated Diver. <i>Galrush</i> .
Corn Bunting. <i>Bush Lark</i> .	Common Guillemot. <i>Murre</i> .
Black-headed Bunting. <i>Blackcap</i> .	Great Northern Diver. <i>Imber</i> .
	Green Cormorant. <i>Shag</i> .
	Sandwich Tern. <i>Big Skirr</i> .
	Arctic and Common Terns. <i>Skirr</i> .
	Great Black-backed Gull. <i>Parson</i> <i>Gull</i> .
	Storm Petrel. <i>Martensil</i> .

I have compiled this list from Mr. Watters' little work on the 'Birds of Ireland,' published in 1853, but long since out of print. My own observation leads me to believe that the names which it contains are still common in Ireland.—CHARLES W. BENSON (Rathmines School, Dublin).

Worcestershire.—The following are a few of the local names for birds in Worcestershire:—

Whitethroat. <i>Hazeck</i> .	Green Woodpecker. <i>Stock-eikle</i> .
Hedgesparrow. The same.	Long-tailed Tit. <i>Hedge-mumruffin</i> .
Flycatcher. <i>Spait</i> .	Willow Warbler. <i>Grass-mumruffin</i> .
Chaffinch. <i>Pie-finch</i> .	Whinchat. <i>Furzechat</i> .

As I have not yet seen Worcestershire represented in the lists that have lately appeared in 'The Zoologist,' I venture to hope

that my imperfect list may elicit a more complete one by way of correction.—W. H. HEATON (Meadow Croft, Reigate).

Norfolk: additional Local Names.—The Norfolk and Norwich Naturalists' Society have just published the fourth part of the second volume of their 'Transactions,' in which I find the following Norfolk names of birds, not included in my recently published list (pp. 287—290):—

Avocet. <i>Shoe-awl.</i>	Female Goldeneye. <i>Little Rattlewing</i>
Spotted Crake. <i>Quail.</i>	(the name of "Rattlewing" only
Tufted Duck. <i>Golden-eye; Arp.</i>	being applied to the male bird).
Teal. <i>Crick.</i>	The different species of Merganser.
Garganey. <i>Summer Crick.</i>	<i>Sawyer.</i>

These names are contained in two letters written by the late Rev. S. Girdlestone, of Great Yarmouth, in 1824 and 1829?—J. H. GURNEY (Northrepps Hall).

Oxfordshire: additional Local Names.—Since I last wrote to you on the subject of local names of animals in Oxfordshire (p. 291), I have been enabled, chiefly by a perusal of Beesley's 'History of Banbury,' published in 1841, to gain some more particulars. The work has a capital flora of the district, and a few pages on the fauna.

Polecat. <i>Fitchet</i> (Beesley).	Greenfinch. <i>Green Linnnet.</i>
Mole. <i>Want*</i> (Beesley).	Heron. <i>Hern; Mollhern.</i>
Common Shrew. <i>Hardy Mouse</i>	Landrail. <i>Corn Crake.</i>
(Beesley).	Red-legged Partridge. <i>Frenchman;</i>
Field Vole (<i>A. agrestis</i>). <i>Short-tailed</i>	<i>French Partridge.</i>
<i>Mouse; Meadow Mouse.</i>	Long-tailed Titmouse. <i>Bum-barrel.</i>
Little Grebe. <i>Didapper; didabber.</i>	Wryneck. <i>Cuckoo's-mate.</i>
Shakspeare wrote, "Like a dive-	Ten-spined Stickleback. <i>Jack Ban-</i>
dapper peering through a wave";	<i>nell</i> (Beesley).
so that the name, with a slight	Rudd. <i>Red-eye; Finscale</i> (Beesley).
alteration, still remains.	

I am much obliged to the Editor for the derivation of the name "Quick-me-dick," which no doubt is correct. The term "Wet-my-lip," found in use in West Norfolk by Mr. Gurney, is additional evidence of this. I believe several trisyllabic words are used, both in England and on the Continent, to designate the Quail's note.—C. MATTHEW PRIOR (The Avenue, Bedford).

* Want = Mole. Amongst the Sloane MSS., No. 2584, is a receipt "for to take wontis." Still in use.—Halliwell's 'Dict. Arch. and Prov. Words,' p. 915.

Scotland.—In continuation of the list of Scotch names on pp. 329-30, I may add the following, similarly named in Yorkshire and in Scotland:—

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| <p>Rat. <i>Ratton</i> in Yorkshire. The Gaelic is <i>Radan</i>; the earlier Scotch spelling <i>Rattan</i>. Now commonly called <i>Rotten</i> or <i>Rottan</i>.</p> <p>Tawny Owl. <i>Brown Owl</i> in Scotland. I see Mr. Atkinson uses it (p. 330), but not as a local name.</p> <p>Ring Ouzel. Also called <i>Moor Black-bird</i> in Scotland.</p> <p>Redstart. Same names as in Yorkshire.</p> <p>Stonechat. <i>Stonechacker</i>.</p> <p>Pied Wagtail. <i>Dish-washer</i>.</p> <p>Black-headed Bunting. <i>Blackcap</i> is rarely applied in Scotland, but <i>Coaly-head</i> is commonly bestowed on this species.</p> <p>Chaffinch. <i>Spink</i>.</p> <p>Rook. <i>Craw</i>.</p> <p>Wild Duck. <i>Grey Duck</i>.</p> <p>Scoter. <i>Douker</i>.</p> <p>This name is usually applied to any Sea-ducks which at times frequent fresh water, as the Golden-eye and Tufted Duck.</p> <p>Tern. <i>Sea Swallow</i>.</p> | <p>Cormorant. <i>Scart</i>, or <i>Scarf</i>; compare with <i>Scarth</i> in Lancashire.</p> <p>Sparrowhawk. <i>Blue Hawk</i> is the name commonly bestowed upon this bird in Scotland. I do not know it as applied to the Hen Harrier (p. 334).</p> <p>Long-tailed Tit. <i>Bottle Tit</i>.</p> <p>Reed Bunting. <i>Blackcap</i> is rarely applied to this bird in Scotland, but <i>Coal-head</i> or <i>Coaly-head</i> is common. In different localities both these latter names are also applied to the Cole Titmouse.</p> <p>Goldfinch. <i>Goldie</i> in Scotland. I am not aware that this name is anywhere applied to the Yellow-hammer in Scotland, but I still await returns from any southern county.</p> <p>Greenfinch. Also <i>Green Linnet</i> or <i>Lintie</i> in Scotland.</p> <p>Lapwing. <i>Teuchet</i> in Forfar and Fife; compare with <i>Tufit</i>, the name applied to this bird in Yorkshire.</p> |
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“Cuddy,” the Yorkshire name for the Hedgesparrow, is also applied to young Lythe, or Coal-fish, or Pollack, in the North and West of Scotland. “Tade,” or “Taed,” is applied also to the Toad, and “Ask” also to the Newt.

Mr. James Lumsden is working at the same subject, with a view to prepare a list of the Birds of Scotland for the Glasgow Natural History Society, and we are assisting one another in our work.—
JOHN A. HARVIE BROWN (Dunipace House, Larbert, N.B.)

CORRECTIONS OF ERRORS.—In the Rev. J. C. Atkinson's Yorkshire list (p. 330), the local name for the Weasel should be “Ressel or Rezzel”; for the Shrew, “Blind Mouse”; for the Swift, “Devil-skriker” (“no Cleveland person ever says ‘shriek,’ always ‘skrike’”); for the Heron, “Hernsew.” “Saddleback” is one of the synonyms of the Hooded Crow, not of the Rook. Page 330, fifth line from bottom, and p. 331, thirteenth line from top, *cf.* not *c.f.* P. 330, third line from bottom, Lincolnshire, not Lancashire. “Höggormr,” not “Höggormv.”

OCCASIONAL NOTES.

BLACK RAT IN CORNWALL.—On August 9th I killed a Black Rat in the cliff at Prussia Cove, Marazion. The dentition was that of an adult, but the animal was about half the size—or a little more—of an ordinary rat, black all over, except the tip of the tail, which was white. The eyes were very prominent, feet large, skin under the fur very white, and the insides of the ears white and hairless. The tail was covered with smooth small hair throughout its length, and was longer than the body and head. Beyond all question it was not a common rat, and from the above description it will be seen that in many respects it resembles the Old English Black Rat, which, although rare in this district, is not extinct. The fishermen here identified it as one of a species which escaped from the wreck of the Italian grain-laden ship ‘Espagnol.’ She was wrecked in Acton Cove, about a mile from this place, some three or four years ago. Immediately afterwards the whole of the surrounding district was swarming with these little rats. One man told me that his cat brought them in day after day for a fortnight; another had a terrier dog which became clever at finding and killing them, and so on. I have no work on the Mammalia with me, and therefore describe the rat as I saw it.—THOMAS CORNISH (Marazion).

[Might not this be the *Mus alexandrinus* of Southern Europe, considered by M. de l’Isle to be a geographical race of *Mus rattus*, and the older or parent breed? See Bell’s ‘British Quadrupeds,’ 2nd ed., p. 306, note.—ED.]

“BRIBE-BUCK.”—In ‘The Zoologist’ for September (p. 326) Mr. Reeks asks the derivation of “bribed,” as applied to the quartering of a buck. I would suggest that “Divide me like a bribe-buck” may be paraphrased as, “Portion me off like a buck when it is cut up,”—“bribe” being derived from the Anglo-Saxon *brytan*, to break; the “breaking” of the deer being a term frequently used for quartering. In that old romance-poem “Sir Gawayne and the Green Knight” (date about 1360), there are most detailed and interesting descriptions of a deer hunt, a wild-boar hunt, and a fox hunt. In speaking of the breaking of the deer, the following line occurs (l. 1339):—

“Sithen *brited* thay the brest and brayden hit in twynne.”

Our own “bribe” (= undue reward) comes from the same root, *brytan*, through the Low Latin *briba*, a scrap of bread, “bribe” having the primitive idea of the scraps of bread or leavings after meals; old French *briber* = to beg. Hence (1) favours or alms bestowed on the poor, (2) rewards generally, then (3) rewards given or offered for corrupt purposes.—EDWARD A. FITCH (Maldon).

[It appears to us that the word “bribe,” or as some editors of Shakespeare read it “brib’d,” must be derived from the French *briber*, to steal, in which

signification it is often used by old writers; for instance, by Chaucer, who writes "bribours" for thieves (see 'The Frere's Tale,' Aldine ed., ii. 248). In a parliamentary Roll of Edward the Fourth's time (Rot. Parl. 22 Ed. IV., n. 30) mention is made of persons who "have stolen and bribed signetts," *i. e.*, cygnets. The word no doubt is an old hunting term borrowed from Norman times, and when it is remembered that the first thing a deer-stealer would do would be to cut up the stolen animal and distribute it amongst his fellows, to lessen the chance of detection, it seems clear that when Falstaff is made to say, "divide me like a brib'd buck," he meant "cut me up and distribute me as you would a stolen deer."—ED.]

GAZELLE HAWKING IN EGYPT.—With reference to the remarks under this head at p. 337, I may mention that, according to Canon Tristram,* the falcon used in the Sahara for the chase of the Gazelle is the Saker, *Falco sacer*. I do not think that any of the jerfalcons would live in Africa, and have never heard of their being brought there.—J. H. GURNEY (Northrepps Hall, Norwich).

SEAL KILLED IN A SLUICE.—A Seal was killed, on September 9th, at Leiston, in this county. It was shot while lying on the end of the Minsmere Sluice, which drains a large stretch of marshes here, and runs out some distance to sea. It is a young animal, and in good condition, weighing just thirty pounds, and measuring forty-one inches in length. It is being preserved by Mr. T. E. Gunn, of Norwich. The man who shot it saw one on the beach near this place some eight or ten years since.—G. T. ROPE (Blaxhall, Suffolk).

DOUBLE MIGRATION OF THE WOODCOCK.—Some of your readers who study the habits of birds may be interested to hear that we have had in this district for the last two or three years what I believe to be two migrations of the Woodcock—one the usual winter migration, the other what I will call a summer or larger flight of birds that arrive in April or a little before that time to nest, and which leave with their young about the latter part of August or in the first week of September, as is the habit of Snipe in one or two localities that I could name. Robinson, in his 'Natural History of Cumberland and Westmoreland' (1709), alludes to something similar in respect to the Swan when it used to nest in this district. He says:—"There come every year a number of Swans to winter upon this water (Bassenthwaite Lake), and in the spring they breed upon the little islands in the water, or in the sedge growing by the side of it, and as soon as the young brood take wing the old ones carry them into southern rivers." The migratory habit of birds is a very interesting study, and particularly that of the wading and swimming class; and having been a wild-fowl shooter

* 'The Great Sahara,' p. 63.

for the last twenty years on various parts of our sea coast, but more particularly in Ireland, I have come to the conclusion that the migratory act in all birds is an acquired habit, originating in the search for food, which after a little time becomes fixed, and then inherited; and is also changeable, as circumstances bring into play a little judgment or reason. It is remarkable that the Woodcock is the only bird known that carries its young in flight, which it frequently does when taking them to the feeding ground at the dusk of the evening, and again early in the morning back to their resting-place in some cover or in the open, as the state of the weather may be. When suddenly disturbed it may be seen mounting over small trees or flying near the ground, carrying a young bird between its legs to a place of safety.—W. KINSEY DOVER (Myrtle Grove, Keswick).

[The Woodcock is not the only bird that carries its young. The same habit has been observed in the Common Snipe, as we have pointed out in our edition of White's 'Selborne' (p. 101, note); and Guillemots and other rock-building birds transport their young to the water by carrying them in the hollow of the back, between the uplifted wings.—ED.]

THE EUROPEAN QUAIL IN AMERICA.—It appears from a recent number of the American journal, 'Forest and Stream,' that a large number of European Quails have been turned out in the United States, particularly in the neighbourhood of Rutland, Vermont; and that, so far as has been ascertained, the experiment in acclimatising the species there has been successful. This year, it is said, 5000 were shipped to America, and that with the remainder of last year's importation and their progeny, a stock of at least 6000 birds was secured. Many of last year's birds paired and nested, and this year several nests with the full complement of eggs have been found. It is asserted, however, that many of those originally imported have strayed to a considerable distance from the place where they were turned down, and that nests have been found twelve or fifteen miles away. This is only what might be expected in the case of a migratory bird like the European Quail, and it is probable that, unless a fresh importation is made annually, and the stock of breeding birds thereby kept up, the whole colony would gradually disperse, and finally disappear from the spot where they were first introduced to American soil.—J. E. HARTING.

THE GREY WAGTAIL GREGARIOUS AT ROOSTING TIME.—I noticed a curious thing the other evening (August 19th), about 7.30 P. M. My brother and I were botanizing round a reedy lake, when we became aware of the presence of a number of Grey Wagtails, *Motacilla boarula*, in a small patch of *Arundo phragmitis*, covering an area of about thirty yards by ten. They continued to arrive in parties of three, four, and five, until there were at least a hundred assembled. They made a low chirping and fluttering amongst the reeds, where they were evidently preparing to roost. It was

curious to see many of them clinging on tail vertically to the upright and bare reed-stems in what seemed a very uncomfortable sleeping position. We watched them for about half an hour, and left them still increasing their numbers. This species of Wagtail is not very common in this part of Ireland, and we could not help wondering at the numbers. Some of them must have come a long way to their roosting tryst. The Yellow, or Ray's, Wagtail I have not seen here this year at all.—H. CHICHESTER HART (Curraghlagh, Croaghross, Letterkenny, Co. Donegal).

[If we mistake not, this is a newly-observed habit of the Grey Wagtail. We have frequently met with large numbers of the Pied and Yellow Wagtails in autumn, when they were flocking preparatory to emigration; but we do not remember to have heard before of the Grey Wagtail roosting in flocks.—ED.]

PURPLE HERON AND WOOD SANDPIPER AT SCILLY.—On September 2nd I received from Mr. Smith, the Lord Proprietor of the Scilly Islands, a good specimen of the Purple Crested Heron, in its rufous immature plumage, in good condition. A minute description of the plumage of the bird is unnecessary; but I may remark that the top of the head, instead of being black, is a beautiful plum-coloured purple, very like the tone of colour seen in plums and grapes with a powdered bloom. The other bird sent over to me is a very good specimen of the adult Wood Sandpiper. Nearly every specimen that I have hitherto procured of this species in the autumn has proved to be a bird of the year, indicated by the light tips of the feathers being strongly tinged with yellow. In this specimen the colour of the spots is pure white.—EDWARD HEARLE RODD (Penzance).

KNOT RETAINING ITS SUMMER PLUMAGE.—On the 30th August I was shore-shooting on the Stirlingshire coast, and saw a Knot with part of the breast bright chestnut. It passed and repassed me and a friend, but we failed to secure it. This is the first Knot I have seen upon our coast retaining any part of the true red plumage until its arrival here in autumn. Shore-birds are this season, however, decidedly earlier in their advent. I have shot hundreds of Knots, many with the buff breast, but none with the decided brick-dust or chestnut-coloured breast.—J. A. HARVIE BROWN (Dunipace House, Larbert, N.B.)

A FIGHT BETWEEN A PAIR OF KESTRELS.—On the afternoon of the 17th August, at Keswick, near Norwich, a gentleman observed two Kestrels fighting and screaming in the air, and saw them drop something, presumably the prey they were fighting for, which, however, was not picked up. The birds continued their fight until they descended to the ground, and afterwards till they were fired at and killed at one shot by the spectator. They proved to be male and female, the male adult and the female apparently adult also.—J. H. GURNEY (Northrepps Hall, Norwich).

HOOPES ON THE SUSSEX COAST.—Two Hoopoes, *Upupa epops*, were shot during the week ending August 24th, between Sidlesham and Selsea. It is not often that this bird is met with during the autumn migration, although scarcely a spring elapses without one or two being seen, and occasionally shot.—WILLIAM JEFFERY (Ratham, near Chichester).

HOPOE IN THE ISLE OF WIGHT.—On the 20th August a Hoopoe was killed at Spring Vale, Isle of Wight. It had been seen about the place for a week previously. It was shot by Capt. Calender on the lawn of Springfield House, and proved to be a male bird in good plumage. This is the third that has been obtained here within the last ten or twelve years.—GEORGE A. CARELESS (Seaview, Isle of Wight).

HOPOE IN GLOUCESTERSHIRE.—It may interest some of your readers to know that a Hoopoe was seen at Charfield Rectory, near Wootton-under-Edge, on September 2nd. The bird remained feeding on the lawn for some time after it was perceived, and approached within a few yards of the house.—R. P. DAVIES (Rector of Charfield).

HOOPES AT THE LAND'S END.—We have had an unusually early visit of Hoopoes this autumn. On an estate contiguous to the Land's End, a full-grown but pale-plumaged male of this species was shot on August 24th, and two or three more were observed about the place—apparently young birds.—EDWARD HEARLE RODD (Penzance).

A DESTRUCTIVE SUMMER SEA.—I should like to call the attention of your readers to the following facts:—On Thursday, August 29th, at 1.30 P. M., the fishermen of Prussia Cove, Marazion, were waiting for the coming of the tide to go to sea. Suddenly, without any warning whatever, a very heavy gale of wind blew into the Cove from the south, and continued to blow for about an hour. It then rapidly moderated, but was succeeded by such a sea as has never been seen here in summer time within the memory of man, and has rarely been equalled in the wildest winter weather. This sea continued until the turn of the tide, which was then at the top of the spring. When the sea receded, it was found that two boats, which had sunk at their moorings, were utterly destroyed; one, which had broken adrift, was also destroyed; and another, which had also sunk at her moorings, met with injuries which are practically irreparable. All the other boats were injured. These four boats were owned by men of the poorest class, whose living, with that of their families, depends entirely upon their fishing. Without the means of replacing their craft, these people have nothing to look forward to in the coming winter but absolute starvation or the Union. I was present myself during the whole of the scene, and can bear the fullest testimony to the fact that the men did everything in their power to save their property;

indeed, I saw very daring acts done. I venture to suggest to your readers that a subscription to help these men should be made, and I shall be very happy to receive for them any money which may be forwarded to me for the purpose. Many of these fishermen have enabled me to bring to the notice of naturalists some of the rarer fishes and Crustacea found off the coast of Cornwall. So far as I can ascertain, the total loss sustained by the men is about £30.—THOMAS CORNISH (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

August 7, 1878.—H. W. BATES, Esq., F.L.S., F.Z.S., President, in the chair.

A communication was read from Mr. M'Lachlan, to the effect that, in the writer's opinion, the larva referred to by Prof. Westwood, at the last meeting of the Society, as boring in the stems of the potato, was in all probability that of a Noctua, *Gortyna flavago*, polyphagous in the stems of a variety of herbaceous plants—foxgloves, thistles, burdock, &c.

Mr. S. Stevens exhibited some living specimens of *Teretrius picipes*, found on oak palings at Upper Norwood—parasitic on *Lyctus oblongus*—running in and out of the burrows during the hot sunshine; also specimens of *Pachnobia alpina*, male and female, bred by Mr. Clark, who found the pupæ under *Vaccinium* on the highest parts of the mountains above Rannoch, N.B.

Mr. Enock exhibited some remarkable varieties of British Lepidoptera, recently described and figured elsewhere.

Mr. Rutherford stated that he had been successful in rearing certain larvæ associated with the cocoons of a moth allied to *Anaphe panda*, exhibited at a previous meeting. They proved to be those of an ichneumon ascertained by Mr. F. Smith to be *Cryptus formosus*, Brullé, parasitical also on *Anaphe reticulata*. A number of specimens of the insect, both preserved and alive, were exhibited.

Mr. Rutherford also exhibited a series of colour-varieties of an African butterfly, viz. *Aterica Meleagris*, Cram., as illustrative of the principle of protective assimilation. He remarked that all the species belonging to the genus *Aterica* were shade-living and extremely local in their habits, with the solitary exception of *Meleagris*, which he had never found in shady places, but always in bright sunshine. He had never observed it settle on leaves, but always on the ground, and with closed wings, the under side of which have such a resemblance to the colour of the soil that he had always experienced the greatest difficulty in detecting the butterfly when at rest.

That this was no mere chance resemblance was evident from the nature of the illustrations exhibited. Thus, the under sides of the wings of two examples from Senegambia were of a dull brown colour, the soil of that region consisting of reddish sand and ferruginous clay, while specimens from Calabar and Camaroons had their under sides coloured light brown, with numerous small white spots, the soil of these countries being composed of light brown clay and small quartz pebbles. Similarly, examples from Natal and the Mozambique coast approached in colour those of Senegambia, that of the soil being nearly the same. Specimens taken at Magila, in the Ussambara country, were of two varieties, one of a dull red colour, that of the soil, and the other brownish, with white spots, the habit of the insect being to settle both upon the ground and also upon granite boulders, with which that region abounds. Five examples from the banks of the Atbara, in Nubia, showed all the varieties occurring in other localities, this being accounted for by the colour of the various deposits of sediment likely to be made by a river passing through such a series of geological formations as occur between Abyssinia and Nubia. It would thus appear that *A. Meleagris*, through some original resemblance in the coloration of its wings to certain conditions of soil, has been able to resist the attacks of its natural enemies, and thus, meanwhile departing from the habits of the family to which it belongs, had acquired the power of distributing itself throughout a large area of country.

Mr. Jenner Weir considered that Mr. Rutherford's views might be extended to the colour variations of *Hipparchia semele*.

Mr. Wood-Mason referred to the many cases of protective resemblance exhibited in the *Mantida*.

Major Elwes considered that too much stress was laid on "protective resemblances," and from a study of the birds of Northern India, had come to the conclusion that the colour variation showed neither for nor against the theory.

Mr. Distant adduced some instances of what appeared to be protective coloration, and stated that he thought in many cases, without further knowledge, the term "assimilative coloration" would be as correct as the designation of "protective resemblance."

The President alluded to the beautiful protective adaptation of coloration in the wings of the lepidopterous genus *Kallima*.

Mr. J. Jenner Weir exhibited five specimens of *Argynnis Paphia*, which he had captured during the month of July in the New Forest, Hampshire. The first was a singular aberration of the male, having two well-defined white spots on the upper wings and two faint white spots on the lower wings; he had heard of similar specimens having been taken in former years, and one other was observed in the present year. The second was a normal specimen of the male, introduced for comparison with the third and

fourth males exhibited. With regard to these two, Mr. Weir remarked that it was well known that a melanic variety of the female of *Paphia* known as *Valezina* was observed every year in the New Forest, and it appeared to him that if he carefully examined a sufficient number of males he might find some which, although not strictly *Valezina*, yet showed a tendency to melanism. After examining a large number, he found two males much darker than usual; the ground colour of the wings was redder, and the four enlarged nervures were very much more deeply edged with black. He was of opinion that these were potentially males of *Valezina*, and that from such males the female of that dark variety would be more likely to originate than from a male of the ordinary colour. The fifth specimen was a true *Valezina*, and he remarked that this year *Argynnis Paphia* was unusually scarce, yet the proportion of *Valezina* was much greater than usual; certainly not less than ten per cent. of the females were so coloured, the usual proportion not being greater than about one per cent. He had himself captured eleven *Valezina*, and had seen three others, and he had not altogether seen one hundred and forty females, if so many. Mr. Weir was confident that the melanism extended to a great extent over the whole of a brood, as eight of those taken were found within a few yards of each other; and in another spot he and his friends had captured fourteen within a short distance of each other; at the same time none were seen in other woods where the species was common. It might perhaps be argued that the melanic variety was confined to particular woods, but such did not appear to be the case, as in spots where he and his friends had seen *Valezina* in former years none were to be found this year. The female of *Argynnis Paphia* when startled usually flies up into a neighbouring tree, and does not wander about, as does the male. He had seen a female in the act of oviposition, and each egg was laid singly low down in the moss-covered stem of the oak; but as far as he was able to judge, all the eggs were deposited within a few yards of each other.

The President remarked that some seasons were probably more favourable than others for the production of dark *Paphias*, still the dark forms might make a new subspecies.

Mr. J. Wood-Mason read a paper "On the Difference between the form of the Antennæ in the Males of *Idolomorpha* and other Genera of *Empusidæ*, a Subfamily of *Mantidæ*."

Mr. Dunning read a paper "On the Genus *Acentropus*."

Papers were also contributed by Mr. Butler, "Descriptions of several new Species of Myriopoda of the genera *Sphærotherium* and *Zephronia*," and by Mr. Baly, "Descriptions of new Genera and Species of South American *Eumolpidæ*, chiefly from the Amazon Region."

Part II. of the 'Transactions' for 1878 was on the table.

NOTICES OF NEW BOOKS.

On the Frontier; Reminiscences of Wild Sports, Personal Adventure, and Strange Scenes. By J. S. CAMPION, late Major, U.S.A. 8vo, pp. 372, with eight illustrations. London: Chapman and Hall. 1878.

PARTLY through love of sport, partly in exercise of military duties, Major Campion found himself, for many months at a time, across the Mexican frontier, in the land of Indians and Buffaloes, an exile from all the comforts of civilization, leading a kind of wild life, suffering at times great deprivation, and incurring not a few dangers. Notwithstanding the unsettled state of affairs with many of the Indian tribes likely to be encountered *en route*, and contrary to the advice of friends, the author, one of a party of five, fully equipped and well mounted, set forth upon his journey.

From the starting-point a waggon trail led for about a hundred miles to Fort Riley; thence a few days' travelling further west would bring the party to where Buffaloes were to be found. The route to Fort Riley lay through the land of the Pottowatomies, a partly civilized tribe, and then across a portion of the country claimed by the Pawnees. These latter were "wild," and though "treaty Indians," had a well-deserved reputation of being the most expert horse-thieves of the plains.

After leaving Fort Riley, the route lay through a region covered over by bands of Sioux, Cheyennes, and Kiowas—Indians nominally at peace with the whites, but known to be disaffected; three tribes of evil repute, and no respecters of treaties when fortune offered a temporary advantage. Looking back to that trip with his acquired experience, the author wonders how he could have been hare-brained enough to have undertaken it, and how he contrived to return unharmed. He assuredly had many narrow escapes from death in various forms, and considering how fully occupied he must have been in protecting life and property, in tracking and hunting game whereon to subsist *en route*, and in taking active measures to prevent a surprise by the numerous parties of treacherous Indians encountered from time to time on

their hunting expeditions, it is surprising that he could have found time to study the habits of the wild animals which he met with, and to note the many interesting particulars concerning them which his book contains.

Wet-mountain Valley, at the foot of the Sierra Verde, extending over an area of forty miles by twenty, enclosed by interlocking peaks belonging to the Rocky Mountain range, and forming a congeries of mountain glades, glens, and small valleys, watered by streams which coursed through osiers and willows, aspens and cotton-wood trees, must be a perfect paradise for explorers who, like Major Campion, combine a love of sport with a taste for Natural History.

"We had the whole valley to ourselves," he says, "and it was full of game—fur, feather, and fin—the streams being full of trout. The game consisted principally of several kinds of deer. In the low valleys and the timber bordering the creeks were 'white-tails,' so called because their tails, which, for deer, are very long—fifteen inches—are quite white on the under side, and they have a way of raising and flourishing them as they gallop away which is very noticeable. These deer have very long legs, standing high for their weight, which averages for bucks in good condition eighty pounds net, and for does in equal condition sixty. They are essentially a creek or valley deer, not frequenting the mountain slopes. Nor do they congregate together in large herds. We often found solitary ones, sometimes two or three, and but rarely as many as a dozen together.

"'Black-tails,' large-bodied, short-legged deer—the bucks dressing a hundred and fifty pounds, the does proportionably heavy—were on the mountain sides, the alps, and the most elevated of the small mountain valleys; being only seen in the plain when crossing from range to range. Large black-tail bucks we often found alone, but it was not unusual to see twenty or thirty black-tails in a herd. On one occasion thirty-seven were counted.

"Last and least, 'spruce-deer,' of which a few small bands ranged high up the mountains; fat, short-legged little fellows, about the size of goats, very hard to find and kill, but furnishing the best venison. Above, far up on the rocky sunny peaks, were droves of the 'Ashlata,' or big-horns—the American equivalent for the 'Argali' of Asia—a true sheep in all respects, though their wool does resemble hair, and whose mutton is, so far as I can judge, the best in the world. In the large valleys were several herds of antelopes [the Prong-horn], averaging about twenty head, but in the 'park' was one of over seventy. They were all very wild and wary, rendered so by being continually chased by packs of wolves. Quantities of elk-

antlers lay in some of the most retired valleys, some so large that a pair being set up on its points would form an arch high enough to walk under without stooping; but we saw no elk.

"The 'sign' of Bears—black, brown, and cinnamon—was everywhere; but they were 'housed for winter.' Grislies were *said* to be habitants of the country, but I do not believe they were. My experience of Grisly Bears—and I have often made their personal acquaintance—is, anybody to the contrary notwithstanding, that they do *not* hibernate. I think the belief that they do so has arisen from the cinnamon, or more properly speaking the cimmarron (Spanish American for 'wild' or 'savage') bears being continually confounded with them by those who write chiefly from hearsay. They are, however, distinct and separate species, one always hibernating, the other, I think, never doing so. Certainly the Grisly does not hibernate in California, where I have frequently tracked them in the snow in mid-winter through; and as we did not do so in Wet-mountain Valley, I doubt their existence there.

"Wolves were very numerous, and of three species—first and foremost, the Grey Mountain Wolf, the largest and fiercest of the genus, hunting in packs by day as well as by night; next, the Timber Wolf, of a dark bluish grey, a solitary, skulking night prowler; lastly, the Coyóte, a small cunning fellow, always hunting or sneaking about by day or night, singly and in small bands.

"Of Foxes, there were a few Silver-greys, whose fur is the most valuable of the fox family; innumerable common American Grey Foxes; a few specimens of the Red Fox; and many 'Swifts'—the last mentioned a species of fox I have rarely met with, and nowhere as plentifully as in Wet-mountain Valley. He gets his name from his great speed, which is astonishing. I believe he is not only *the* fastest goer of his size, but absolutely *the* fastest of all animals. He is of a blackish grey colour on the back, with a handsome silver-grey, white-tipped tail. His ears, neck, upper fore-legs, and hocks are reddish orange, and the edges of his thighs, belly, breast, and throat pure white. He is as pretty as he is fleet, and can catch a rabbit as easily as a collie can a sheep.

"The cat genus, from Lynx to Pumas, was well represented; Raccoons, Badgers, Miuk, Otter, and Beaver were plentiful, and 'varmints' of all kinds abounded.

"Of game birds only wild Turkeys were in sufficient numbers to be objects of pursuit. There were a few Mountain Partridges, and some Wood Grouse; but wild cats and foxes kept them very scarce, as they also did rabbits and mountain hares. The Turkeys differed slightly from those we had been in the habit of shooting farther north and east. They were much lighter and more parti-coloured in their plumage, showed much more white and brown markings, but had the same calls and habits.

None of the flocks were large. They ranged from a dozen to thirty head to the 'drove.'

"Of predatory birds first mention belongs of right to 'the king of the air,' the great American White-headed Eagle, who in that locality was, for him, numerous. Turkey-buzzards could be always seen wheeling aloft, and occasionally some immense Vultures; but we were not able to get a close inspection of any of them, for they kept out of shot. Had we not been so far north of the limits assigned by naturalists to the Condor, we should, from their size and flight, have believed these birds to be such. Hawks and Owls of many varieties were there, and Magpies and Jays were more plentiful than welcome, for they were very bold and great nuisances, pilfering our meat, springing our traps, and alarming game that we were stalking by screaming out at us; in short, by making themselves generally detestable; and small birds, not game, abounded in every wood and thicket—many of familiar kinds, many of strange ones."

The diversion of "Turkey-roosting," as it is called, is not without its attractions for the sportsman; and being a mode of killing Turkeys only practicable in few places and at certain times, can be but occasionally indulged in, and so possesses the added charm of rarity. The full of the moon is the opportunity for Turkey-roosting, and the first necessity is to "roost your Turkeys." This is done by watching, from a little before to some time after sunset, on an eminence commanding a view of some range of timber in which Turkeys are likely to roost. Having marked them down, the shooter stealthily approaches the trees in which the birds are perching, and looks about until he can see one sitting. His object is then to "moon his Turkey"—that is to say, to get a partial Turkey eclipse of the moon by bringing his eyes, the bird, and that luminary in a line. This being accomplished, he brings his rifle to his shoulder, pointing it horizontally in a direction which would meet at right angles a perpendicular from the ground to the bird. In this position the moonlight falls full on the barrel of his rifle and lights up its sights. The hunter draws the front sight well down in the notch of the hind one until he gets his "bead," then he carefully raises his weapon until the shadow of the Turkey falls upon it. As the rifle-sights darken, the hair-trigger is touched, and if the sportsman's nerve be steady, his eye and finger true, and his rifle what it ought to be, a prize well worth the exercise of his skill will drop with a heavy thud at his feet.

It was on returning from a night's sport of this kind that

the author witnessed a singular attack by Wolves on a herd of Antelopes, which he thus describes:—

“We arrived at the crest of a hill overlooking a wide vale while it was yet illuminated by the full semi-tropical moon, by whose light we had been shooting, and, casting a glance over it, observed a pack of Grey Wolves surrounding a herd of feeding Antelopes. We paused to watch their proceedings. About fifty wolves were spread out in a great semicircle, crawling and sneaking along, their grey coats hardly visible in the silvery light. As the horns of the semicircle commenced to close round the herd of Antelopes, some among them got the wind of the Wolves, and giving the alarm, the whole herd immediately closed up and stood looking about them, hesitating which way to fly. Simultaneously the Wolves rushed in, and the Antelopes scattered in all directions, the bulk of them breaking through the line of their assailants, but some half-dozen being pulled down, torn to pieces, and devoured instantly. Then the Wolves packed, and started in a long swinging gallop on the tracks of the flying herd, giving tongue as they ran, like a pack of hounds.”

Major Champion's remarks on the Beaver, its habits, and the mode of trapping it (pp. 147—165) are very interesting, but too long to be quoted here. The height of the “dam,” he says, varies with the rapidity of the streams they are built across, and where the current is fast the fall of the water-course is great; and then they require to be high, otherwise the water would not be backed sufficiently for it to make a pool of adequate size.

“In mountain streams about eight feet is their average height. For instance, suppose you stood below one regarding it, then the dam would stretch across in your front, from bank to bank, eight feet high, and present a perpendicular face of branches, with their butt-ends towards you; these ends varying in size from half an inch to two inches in diameter. This is undoubtedly the right way for the sticks to lie, as is well known by all engineers who have had occasion to make ‘brush-dams’; and the reason is obvious, for as the smaller twigs and forks on each branch, when laid in such a manner, face the stream, they catch all sediment coming down with the water, which, lodging, helps to make and keep the ‘dam’ water-tight.”

With this extract, we must conclude our notice of Major Champion's book. From the passages above-quoted, the reader will be able to judge not only of the author's style, but also of the sort of information which he has to impart on the Zoology of the country explored by him.

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ON SOME PECULIARITIES IN THE ANATOMY OF SOFT-SHELLED TURTLES.

BY G. A. STOCKWELL, M.D.

AMONG the remarkable forms which, while preserving a general conformity to the typical structure, Nature has impressed upon the Vertebrates, none perhaps present greater anomalies than the order *Testudinata*. They have ever attracted attention, and afford rich results when they become the subject of anatomical investigation. Strange to say, while the Soft-shelled Turtles of the Old World are almost exclusively confined to those regions south of the twenty-first isothermal, the distribution of their North American representatives is exactly the opposite.

In the Upper Mississippi Valley, and throughout the Great Lake Region, even as high as Athabasca, is found *Aspionectes spinifer*, Agassiz (*Tryonix spinifer* of Lesson), which, unlike the majority of Tortoises common to this region, presents a peculiar conformation of the paws entirely unfitting it for terrestrial locomotion, and only suitable for swimming. Each paw possesses three toes, all more or less movable, and joined together as far as the nails by broad flexible membranes; and it is by no means certain that a fourth toe is not common, though but a rudimentary tubercle, as several specimens have been seen with this peculiarity.

The observations of the writer were begun some years since under the pupilage of Professor Sager, State Zoologist of Michigan, and confined almost exclusively to Michigan and Ontario, where, strange to say, the above-named species is common to all the

streams that flow to the south and west, but so rare—if, indeed, present at all—as to be utterly unknown as an inhabitant of the waters flowing eastward. The cause of this is unknown, but is probably connected with the character of the water and supply of food, as the same may be said of the Brook Trout (*Salmo fontinalis*), which is abundant in the north-western streams of Michigan, but wanting in those whose waters mingle with Lake Huron—except those of the opposite Canadian shore.

The female *Aspidonectes* usually exceeds the male in point of size, attaining an extreme length of from twenty-four to twenty-eight, and, in rare instances, thirty inches, with an average length of carapace of fifteen to eighteen; while specimens of the latter are rarely found exceeding one-half the extreme size of the females, averaging usually about fourteen inches. The sternal plastron in both sexes is not ossified across its middle, and the carapace is without marginal pieces. The latter, however, is very much flattened and expanded, but unprovided with scales, covered instead with a soft derma, which has given rise to the common designation of "Soft-shelled Turtle." Nearly one-half the length of the upper shell, and more than one-fourth its breadth, is composed of fibrous membrane of leathery consistency, mistaken for, and erroneously termed, cartilage, by many writers. Olive-brown above, beneath it is of a dirty yellowish white, greatly mottled, streaked and dotted with black. A blunt keel along the median line slopes uniformly to the sides; and the anterior margin is furnished with spines and tubercles, largest and most abundant in the female.

An elongated and protractile neck, and nostrils prolonged into a sort of trunk or proboscis, is likewise characteristic of the species. The jaws are trenchant, distinctly serrated on their edges, presenting the general aspects of bone, though a microscopic section reveals only the angular nucleated cells of horny tissue, while a fold of skin presents the appearance of lips. The tongue is short, triangular and soft, but not fleshy, and exhibits a peculiar surface, on which is arranged, somewhat in rows, a great number of delicate fringes resembling the filiform processes of the gills of the *Menobranchus*.

In common with other species of this genus, the ribs are united by, and invested with the ossification of the sub-dermal and intercostal fibrous membrane; and hence the margins of the ribs may,

in general, easily be traced upon the interior of the carapace. But the most marked results of this defective ossification is the entire separation of the eighth pair of ribs from those anterior, they being held in position only by dense fibrous investment. This is entirely different from what we are led to expect; for Cuvier, in remarking upon the carapace of this genus ('Ossements Fossiles,' tome ix., p. 398), observes that "There are eight pairs of ribs, *united by sutures*, which in these, as well as in the Marine Turtles, are not dilated to their outer end, but of which the dilation extends with the age of the individual."

The relation of the alimentary canal to the size of the reptile, too, varies considerably from the proportions taught. In a specimen two feet in extreme length, the entire length of the digestive apparatus was exactly four feet, divided as follows:—Œsophagus, nine inches; stomach, six; small intestine, twenty-seven; and colon, including the cloaca, six inches only—this absolute and relative length of the tract indicating a purely carnivorous diet on the part of its possessor. Cuvier gives the relative length of the alimentary tract to the body, as observed in the *Emydidæ*, as five to one; and Rymer Jones, in contrasting the carnivorous with the herbivorous *Testudinata*, remarks that the "*Emydidæ* are more carnivorous in their habits, and in the *Trionychidæ* the alimentary canal is shorter—at least the larger intestine, which is not longer than the small." With *Aspidonoctes*, the large and small intestines, as we have seen, vary materially in length; but they are almost continuous with each other, no angle being formed at the junction, and the separation marked only by a slight valvular constriction: the former, too, though possessed of a trifle greater diameter, is much less muscular than the small intestine, and consequently more distensible.

Again, Cuvier remarks that in those genera of the order other than salt-water Turtles, "the œsophagus presents only longitudinal folds and numerous orifices of mucous crypts." But in the species under consideration we find the greater portion of the gullet covered with bifid fringe-like processes; and upon the fauces, the upper portion of the larynx (*rima glottidis*), and the arches of the hyoid bone, presenting both the character and arrangement of those of the tongue, before noted as resembling the gills of the *Menobranchus*, or more properly, perhaps, the internal ciliated respiratory apparatus of the Tadpole.

The stomach is much thicker, and naturally more muscular, than either the œsophagus or intestines, and presents the appearance of an elongated transverse canal doubled upon itself. Neither the mucous membrane of the stomach nor of the intestines is arranged in folds, but both are finely and beautifully reticulated over their entire surfaces. The lower portion of the gullet, however, is longitudinally plicated, apparently from the contraction of its muscular covering.

The heart possesses two fleshy auricles, and, on casual external inspection, when in motion, apparently contains also two ventricles; but on opening it, the deception is readily accounted for by a strong muscular septum that partially divides the common ventricle. Four arterial orifices, each guarded by valves will likewise be noted, three of which communicate with the cavity on the left side of the septum, while the fourth, that of the pulmonary artery, is upon the right. The venæ cavæ pulsate simultaneously with the common ventricle, and alternately with the auricles.

Two flat lobes, connected merely by a pair of narrow transverse bands, constitute the liver. To the right lobe is appended the gall-bladder, a mere cyst, which is not received into a fissure or groove, but lies externally enclosed by a sac, which is apparently a proliferation of the peritoneal hepatic membrane. The spleen is a cylindrical organ, its length exceeding by about three times its transverse diameter, and varying little in proportion to the different sizes of adult specimens, averaging upwards of an inch—from an inch and a quarter to an inch and a half—in length by one half to three-fourths of an inch in diameter. The pancreas is closely attached to the duodenum, and in the largest female specimens exceeds four inches in length, being of narrow flattened form: in a large male it was but two and one-eighth inches, and a trifle broader and more rounded in proportion.

The kidneys are composed of numerous lobes closely overlapping each other; the ureters terminate in the cloaca at from a half to three-fourths of an inch from the orifice of the bladder, being attached to the nipple-like processes of the oviduct in the female (precisely as described by Owen as occurring in *Platypus anatinus*), and in the male upon the *vas-deferens*, the latter likewise forming small but markedly distinct papillæ. The bladder presents a uniform oval outline, and is very obviously muscular, much more so than the *Emydidae* and

Cinosternidæ, but not more so perhaps than that of some of the aged *Chelydridæ*.

The generative organs of both sexes possess many points of interest, and many striking peculiarities of structure. The oviducts of the female are greatly extended, and each possesses a distinct sphincter near its prominent orifice. Moreover, the distal or inferior third is abruptly narrowed into a small duct—the analogue, perhaps, of the Fallopian ducts of higher Vertebrates; but the remainder corresponds in relative position and value to the uteri of Marsupials and Monotremes. The lining membranes of these organs is remarkably white and smooth, and with the exception of perhaps two or three minute and isolated mucous glands presents neither crypt nor follicle—nothing apparently to provide for the covering of the eggs of the reptile; yet it would seem, in spite of appearances to the contrary, that this mucous lining must nevertheless possess the power of rapidly secreting calcareous material.

The ovaries proper average from three to five inches in length, and appear merely as the thickened edge of the mesenteric membrane with which they are invested, and which suspends them in proper position and connects them with the kidneys and other viscera. They are scarcely more dense than those of the *Ranidæ*, and the ova are produced only in a narrow strip of the outer part of the meso-ovarium.

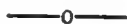
The male organ is usually represented by comparative anatomists as large, both in structure and in form, and resembling closely what obtains in the *Struthionidæ*, particularly the male *Struthio camelus*. The singular intricacy of the structure, while it presents an analogy to some of the Marsupials, as the *Echidnæ* and Monotremes, in which the same organ is likewise quadrifid, more nearly resembles the double bifurcated organ of the *Crotalidæ* and *Viperinæ*, yet is even more complicated than in these reptiles. This hardly tallies with Professor Owen's supposition that the bifid extremity of the male organ is an adaptive structure corresponding to the bilateral or double uterus of females, and having reference to multiparous reproduction. If such were the case, we should reasonably expect to find the female *Aspidonectes* possessed of a quadruple uterus; whereas, as already shown, it is but a double organ. The cloacal orifice, which is located half an inch or more from the extremity of the somewhat elongated tail, would seem to suggest an explanation of the length of the latter organ, which

averages from three to four inches in length in a relaxed condition, and nearly half an inch in diameter. Its posterior extremity is provided with two large, soft, diverging and erectile bulbs, the erectile tissue of which extends through the whole length of the *corpora cavernosa*.

The peritoneal canals, which in other species penetrate nearly to the male organ, in the *Aspidonectes* do not reach one-third the length of it. The testes seem disproportionately large in smaller individuals, those of a reptile scarcely nine inches in length equalling those of a specimen fully fourteen inches over all. They measured one and one half inches in length, by from one-fourth to to one-third of an inch in thickness, having the elongated form of the organs of pennibranchiate reptiles rather than the round one common to the *Testudinatæ*. Both the *epididymis* and the *vas-deferens* are very long and convoluted.

Of the peculiarities of the muscular system, those of the retractors of the neck present the most interesting differences. Cuvier describes the *retrahens capitis et colli* as arising by its longer part from the ribs of the fifth and sixth dorsal vertebræ, within the carapace, and, passing in the interval between the lungs on the sides of the anterior part of the neck, is inserted by means of *fasciculi* to the transverse apophyses of the third, fourth, and fifth cervical vertebræ, the long *fasciculus* passing to the head to be inserted on the basilar process of the occipital bone; the shorter portion, arising from the fourth and fifth dorsal vertebræ beneath the articulation passes for insertion into the side of the sixth cervical. But in the *Aspidonectes* the *retrahens cervicis* is a single muscle on the side of the neck, and at the anterior attachment, but in its posterior insertion becomes a triceps. Attached to the side of the first cervical vertebræ it follows by its side to the thorax, where it divides into three separate portions, which, however, remain side by side in the anterior part of the cavity and between the lungs, there dividing, one part passing back alongside the vertebral column, through the pelvis, to be inserted into the posterior portion of the fourth caudal vertebræ; the other two portions diverge laterally, one being inserted into the intercostal space of the sixth and seventh ribs, and the other into the outer part of the like space of the seventh and eighth. This muscle replaces the *retrahens capitis collique* described by Ludwig Heinrich Bojanus.

The difficulty in preserving specimens of the Soft-shelled Turtle sufficiently long is a great drawback to anatomical investigation. Even arsenite of potassa fails to exert the preservative effect for which it is so justly celebrated in connection with morbid specimens in general. The vascular and nervous systems present many points of interest and novelty, which, however, demand a little more attention than I have yet been able to give, and are well worthy of separate consideration.



NOTES FROM AN ARCTIC JOURNAL.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

(Continued from p. 384.)

Our course from the Cary Islands to the northward took us through the channel lying between Hakluyt and Northumberland Islands. There is a large breeding place of Looms on the north-eastern face of Hakluyt Island, and myriads of Little Auks were flying up and down to their nesting haunts in the talus of the cliffs. The breeding places of the sea-fowl along the shores of this region appear to be continuous, and are occupied by incredible numbers of Looms and Little Auks. Dr. Kane, in those pathetic chapters of his charming work,* which relate how he and his worn-out companions escaped from Smith Sound, and traversed Melville Bay in frail open boats during the summer of 1855, tells us how his party subsisted almost entirely on the spoils of these aukeries and loomerics. The official narrative of the 'Polaris' Expedition† records similar experiences. On the 8th June, 1873, the party from the 'Polaris,' retreating south in the track of Dr. Kane, and under very similar circumstances, found Little Auks extremely numerous in their aukeries on Northumberland Island. The narrative relates that on the following day after a heavy south-west wind, which closed the pack on the land, every auk disappeared. It is evident from this that they were not incubating at that date.

A chain of immense icebergs stretched on our port-side from Hakluyt Island to the entrance of Smith Sound. One of them was of remarkable shape: from a square base, and at right angles

* Kane's 'Arctic Explorations,' vol. ii.

† 'Narrative of the Polaris Expedition,' Washington, 1876.

to one another, arose four pinnacles, which we estimated to be not less than two hundred feet above the water-line. By what means icebergs assume these peculiar shapes does not appear to me satisfactorily explained. It is evident that subaërial destruction can have little or nothing to do with the shaping of these extraordinary monuments, and it is difficult to imagine why subaqueous action should exert its influence so irregularly, as evidenced in the pinnacled bergs of Baffin Bay and Davis Strait.

On the 28th July we anchored in Foulke Fiord, on the opposite side of the bay to where Dr. Hayes wintered in 1860-61. Landing near Jensen Point, of Dr. Hayes' chart,* we ascended a valley lying on the north side of the Dodge range of hills. In the valley were many traces of Reindeer, shed antlers and footprints being common, but we were not so fortunate as to see any of the animals themselves. Some of our companions who landed on the south side of Foulke Fiord discovered a herd of Reindeer, and secured one. The valley by which we proceeded inland was in some parts swampy, but supported a fair amount of vegetation. The arctic poppy, *Papaver alpinum*, was in full bloom, and actually made some spots look quite gay with its yellow flowers. I also noticed, for the first time, the beautiful *Cheiranthus pygmaeus* growing on rocky slopes, taking the place in these Arctic wilds of our familiar wallflower. The only birds observed inland were a few Snow Buntings in family groups, the old birds of which were putting on their winter plumage. Beside a marshy rill, six Knots, *Tringa canutus*, were seen, and one of them secured. No doubt these latter birds were breeding in the vicinity. I was somewhat astonished at the time to meet with two butterflies (*Argynnis chariclea*), a large bee (*Bombus balteatus*), a crane-fly, *Tipula arctica*, and another fly which was very abundant, standing dead on stones near streams. I could not understand how the last-named resisted being swept away by the force of the winds, until I discovered that each dead fly adhered by its proboscis so firmly to the stone that the head parted from the body when an attempt was made to disengage it. Numerous traces of Eskimo inhabitants were observed during our wanderings inland, especially fox-traps, in one of which I found a fine Blue Fox; so it was evident that the Eskimo had only recently left the neighbourhood.

* 'The Open Polar Sea,' p. 96.

The valley by which we ascended to the highlands showed evident signs of having once been occupied by a small glacier; moraines and mounds were stretched across it, the trough of the valley being worked down to the gneiss; the softer strata of sandstones and basalts were eroded, except on isolated mounds and knobs. These sandstones varied in colour from brick-red to dull white, split easily, and showed a great deal of ripple-markings; a long and careful search produced no trace of fossil remains. To the northward, in the direction of Cairn Point and Rensselaer Harbour, stretch a series of ice-rounded gneissoid hills, of a general red colour. On the south rises a flat-topped range, called, by Dr. Hayes, Dodge Mountain, after one of his companions. This same range forms the northern escarpment of Foulke Fiord, and a similar formation occurs on its southern shores, notably at Cape Alexander, where the *mer-de-glace* descends to the sea on both of its flanks and isolates it from the mainland. From the station I reached, the inland ice was at least five miles distant, and to the northward a stretch of hills at least ten miles in width lay between it and the coast. At that season this border-land was almost free from snow, and gave one a fair opportunity of examining the surface. At the points visited by me, the evidence was conclusive that at some time or other the greater part of the land, now free from the *mer-de-glace*, had been subjected to the grinding-down process of ice-action; the moraines in the valleys, erratics perched on the slopes of the polished gneiss hills, the destruction of the softer strata in the valleys, all told the same tale. A very suggestive evidence appeared in a well-defined moraine stretching across a valley that debouched on the shore not far from where our ships were anchored. This moraine ran across the valley at an elevation of 300 feet; at the time of our visit an impetuous torrent of melted snow had cut a section fifty feet deep through it, showing that it was composed of gneiss, basalts, and sandstones; the interstices between the blocks were filled with fine sand, and amongst the sand were imbedded multitudes of the shells of *Saxicava rugosa* (many with both valves still connected), *Mya truncata*, and sparingly *Cardium islandicum* and *Tellina calcaria*. This undoubtedly, to my way of thinking, had been formed by the submerged snout of a glacier, and the question naturally arose whether at some former period the *mer-de-glace* had not a greater extension than at present, or whether the marks of ice-action over

the surface of the coast region are to be assigned to the period of submergence. At present we appear to be entirely in the dark as to the exact action of an ice-cap. Does the stupendous mass of frozen water which we are led to believe buries the interior of the continent of Greenland to a depth of thousands of feet remain quiescent, like liquid water in a deep lake, or does it move? In both cases the effluents, namely, the glacier and the river, can be seen at work, and their results estimated. Unless we grant to the ice-cap the power of erosion, I am at a loss to account for the physical contour of a large part of the Arctic Regions, and if the roundings of the hills and the scoopings out of the valleys and fiords are due to such a cause, then there must have been a period of as extreme glaciation in the northern regions of our globe, as we are led to believe now exists at the South Pole.

Returning from my long walk late in the evening, I was so fortunate as to fall in with a boat and party, at the shore, on its way to visit the settlement of Etah, which lies some considerable distance up Foulke Fiord. As we pulled up the fiord, the air above was filled with thousands upon thousands of specks, which were Little Auks passing from their breeding-places to the sea. By this date the young ones were all hatched, and when taken out of their nests appeared as balls of black down. Dr. Hayes has given an interesting and graphic account of the aukeries of Foulke Fiord and the mode of capturing the birds by the natives. He writes:—

“It would be impossible to convey an adequate idea of the immense numbers of the Little Auks which swarmed around us. The slope on both sides of the valley rises at an angle of about forty-five degrees to a distance of from three hundred to five hundred feet, where it meets the cliffs, which stand about seven hundred feet higher. These hill-sides are composed of the loose rocks which have been split off from the cliffs by the frost. The birds crawl among these rocks, winding far in through narrow places, and there deposit each a single egg and hatch their young secure from their enemy, the foxes, which prowl round in great numbers, ever watching for a meal. The birds were more noisy than usual, for they had just returned in immense swarms from the sea, where they had been getting their breakfast. Kalutunah carried a small net, made of light strings of seal-skin knitted together very ingeniously. The staff by which it was held was about ten feet long. After clambering over the rough, sharp stones, we arrived at length about half-way up to the base of the cliffs, where Kalutunah crouched behind a rock and invited me to follow his example. I observed

that the birds were nearly all in flight, and were, with rare exceptions, the males. The length of the slope on which they were congregated was about a mile, and a constant stream of birds was rushing over it, but a few feet above the stones; and, after making in their rapid flight the whole length of the hill, they returned higher in the air, performing over and over again the complete circuit. Occasionally a few hundreds or thousands of them would drop down, as if following some leader; and in an instant the rocks, for a space of several rods, would swarm all over with them, their black backs and pure white breasts speckling the hill very prettily.

"While I was watching these movements with much interest, my companion was intent only upon business, and warned me to lie lower, as the birds saw me and were flying too high overhead. Having at length got myself stowed away to the satisfaction of my savage companion the sport began. The birds were beginning again to whirl their flight closer to our heads—so close, indeed, did they come that it seemed almost as if I could catch them with my cap. Presently I observed my companion preparing himself as a flock of unusual thickness was approaching; and, in a moment, up went the net; a half-dozen birds flew bang into it, and, stunned with the blow, they could not flutter out before Kalutunah had slipped the staff quickly through his hands and seized the net; with his left hand he now pressed down the birds, while with the right he drew them out, one by one, and, for want of a third hand, he used his teeth to crush their heads. The wings were then locked across each other, to keep them from fluttering away; and, with an air of triumph, the old fellow looked around at me, spat the blood and feathers from his mouth, and went on with the sport, tossing up his net and hauling it in with much rapidity, until he had caught about a hundred birds; when, my curiosity being amply satisfied, we returned to camp and made a hearty meal out of the game which we had bagged in this novel and unsportsmanlike manner."*

Eider Ducks were breeding in considerable numbers on some rocky islets near Reindeer Point, and about fifty were brought on board. A few Kittiwakes and Glaucous Gulls were flying around.

After a pull of a couple of miles up the fiord, we landed at the village of Etah, a spot very familiar to the readers of Dr. Kane's narrative. The settlement consisted of three stone "igloos" and one roofed over with canvas spread on spars. The place was deserted. The village is situated in a sheltered nook overshadowed by gneiss rocks, with a good look-out to the south and west. Traces of recent occupation were visible on all sides; the igloos

* 'The Open Polar Sea,' pp. 390—392.

were filled with large quantities of blubber, which smelt very disagreeably to our fastidious senses. Many articles that must have been brought from the camp of the 'Polaris' people were scattered around, such as a pillow, a sailor's blue cloth jacket enveloping putrid seal-meat, a single canvas boot, pieces of bar-iron, an iron saucepan, an ice-chisel marked "U.S.," part of a volume of one of the early Arctic voyages, a number of the 'Sunday Magazine,' dated September 1st, 1865, and many other relics of civilization. Several arrows were found; one I brought away had the shaft made of deal, tipped with two feathers, and an iron barb neatly let into a brass stem. Many bones and antlers of Reindeer lay around, also bones of the Walrus. Hundreds of the sterna of *Mergulus alle* showed that these birds formed no inconsiderable part of the subsistence of the natives at certain seasons. The stems of *Cassiope tetragona* had been used as fuel, and considerable quantities of this plant were stored away in dry clefts of the rock. A dog-sledge that we found, made entirely of bone most ingeniously fastened together with thongs of hide, was a marvel of strength and elasticity; the runners were made of pieces of walrus-tusk. At various spots along the shore of the fiord are sites of ancient residences; these have fallen in, and are now only noticeable by the extra green of the mounds. Immense quantities of bones are scattered round these spots, with many fragments of bone-implements.

There appears to be a general impression that the tribe of Eskimo inhabiting the belt of coast-line between Melville Bay and the Humboldt Glacier is rapidly dying off, and before long will be extinct. Kane,* referring to these people as he found them in 1854 and 1855, describes them as—

"A simple-minded people, for whom it seems to be decreed that the year must very soon cease to renew its changes. It pains me when I think of their approaching destiny,—in the region of night and winter, where the earth yields no fruit and the waters are locked,—without the resorts of skill or even the rude materials of art, and walled in from the world by barriers of ice without an outlet. The narrow belt subjected to their nomadic range cannot be less than six hundred miles long, and throughout this extent of country every man knows every man. I have a census, exactly confirmed by three separate informants, which enables me to count by name about one hundred and forty souls, scattered along from Kosoak, the Great River

* 'Arctic Explorations,' vol. ii., pp. 210, 211.

at the base of a glacier near Cape Melville, to the wind-loved hut of Anootok."

Dr. Hayes,* writing of the same people as he found them five years later, says that, from information which he obtained through Hans and Kalutunah, he estimated the tribe to number about one hundred souls—a very considerable diminution since Dr. Kane left them in 1855. The official account of the American Expedition under Hall, mentions that between the autumn of 1872 and the 1st May, 1873, one hundred and two Eskimo—men, women and children—visited Polaris House, with as many as one hundred and fifty dogs, the whole population along the coast from Melville Bay to Humboldt Glacier being estimated at one hundred and fifty souls. This is very satisfactory, for, in spite of Kane's gloomy prognostications, we find the tribe, after a lapse of nearly twenty years, exhibiting no sign of diminution.

Considerable interest must always attach to this isolated tribe, existing, under the most adverse circumstances, as the very northern outpost of man. Science and civilization are to a certain extent their debtors; they saved the lives of Kane and his companions; without their assistance Hayes would have been unable to carry on his investigations in Smith Sound; and they aided the party who escaped from the wreck of the 'Polaris' and wintered near Littleton Island. The journal of Hans Hendrik, one of the Greenlanders who accompanied our Expedition, and who resided for five years with the "unchristened natives of the north," records that—

"In the days of yore their ancestors used to visit Upernivik, for which reason they still speak of 'Southlanders.' Those northern people had for their merchandise walrus-teeth, for which they got wood, whereas the Southlanders had wood to barter with. Their ancestors also possessed 'kayaks.' The men yonder in the north subsist by the pursuit of White Whales along the edge of the ice, using four hunting bladders in connection with one line, but on the big ice only one bladder. They get the Seals which lie near their breathing-holes upon the ice by creeping up to them and harpooning them. They pursue the Walrus by the aid of two hunting lines, both ends of which are furnished with a harpoon, and their spears are headed with a chisel. As soon as the line becomes tightened by the pulling of the stricken animal, they thrust this into the ice to hold. They also catch Seals by having many breathing-holes at once occupied by men. One

* 'The Open Polar Sea,' p. 386.

man then generally catches a great number, while the others only get a few, as the Seals, when at the point of choking, have recourse to a few holes without leaving them. Bears they kill by spearing them, after having brought them to bay by the dogs. They capture Foxes in traps of four different descriptions. For Hares they use nets made of seal-skin thongs. For birds they also use an implement like a catcher."*

Our stay at Port Foulke having been limited to twenty-four hours, we had just sufficient length of time at our disposal to observe what an interesting locality it would prove for further investigations, and though, like the rest of my companions, most anxious to push on, yet we all regretted that our visit was necessarily so short. It may be as well to point out here that Natural History and physical investigations occupied a secondary place in the programme of the Expedition, its main object, as set forth in the sailing orders, being "to attain the highest northern latitude, and if possible to reach the North Pole;" consequently every other consideration had to be subordinated to this express command. The opportunities of landing during the passage were confined to those few occasions when the ships were embayed in the ice near the shore. When the ice opened and the dredge or trawl might have been lowered with advantage, that was the very time to press forward, and every energy had to be devoted to the furtherance of that end. Sometimes a combination of circumstances stopped our vessels in places where they were surrounded by water; such opportunities were never missed, and though usually on these occasions all were weary, cold and exhausted, yet the extra toil and labour involved in the lowering and hauling up of the dredge were voluntarily and cheerfully undergone. In reviewing the scientific results of an Arctic voyage, the almost insuperable obstacles that beset an inquirer should be realized, and it is only right, for the sake of those who may go to those regions in the future, that the difficulties which must be encountered should not be glossed over by those who have experienced them.

Captain Nares having decided to attempt the passage of Smith Sound by hugging the western or American side of the channel, our vessels crossed over the following morning to Cape Isabella, where despatches were landed and a cairn erected. The formation of that Cape is red and white granite, which at a short distance might very well have been taken for alternating strata of red and

* 'Geographical Magazine,' Feb. 1878.

yellow sandstones. At the point where Markham and I landed the dip of the granite was to the north. Fog, sleet and a cold wind, with a good deal of swell, made landing a very uncomfortable task. Through the driving mist and sleet a few Fulmars were to be seen whirling like ghosts in the lead-coloured sky above us. The ships were now surrounded by the drifting pack coming down the Sound, and from this date until our arrival in winter-quarters it was a succession of conflicts with the ice, only varied day from day by the greater or less number of risks run.

On the morning of July 30th, after battling twenty-four hours fruitlessly with the pack, our ships took refuge in a small harbour near Cape Sabine, lying between Brevoort Island and the mainland. Before getting under the lee of the land a sounding was obtained in 210 fathoms with grey mud. It proved to be richer in Diatomaceæ (notably *Coscinodiscus radiatus*) than in Rhizopoda. Of the latter *Cassidulina*, *Truncatulina* and *Nionina* were the most prominent types.* We remained off and on in the shelter of Payer Harbour for five days. Whenever there appeared the slightest sign of opening in the pack outside, our two ships ran into the ice, and endeavoured to find a lead- or water-way around the prominent headland of Cape Sabine, against which the drifting ice impinged with great force, rearing up huge hummocks on its northern face.

It was very aggravating, at almost the outset of the Expedition, to meet with such unexpected delays. We had been led to hope that an almost continuous water-way would have been found through Smith Sound, and we dreaded greatly being caught in the pack and drifted helplessly to the south, feeling how disappointing such an untoward result would be to people in England. These delays, however, gave me several opportunities of landing and examining the surrounding country. Its appearance was sadly bare and desolate; the land rose abruptly to a height of 1500 or 2000 feet, and was chiefly composed of a red syenite, which does not appear to disintegrate freely, and consequently little or no soil had been formed in likely spots. No valley led into the interior, and a careful search did not produce above twenty flowering plants; a pretty little fern, *Cystopteris fragilis*, was found growing freely as high as 250 feet above sea-level. The summits of the hill-tops that I ascended were strewn over with boulders of foreign rocks,

* Brady, 'Annals and Mag. Nat. Hist.,' June, 1878, pp. 425—440.

chiefly yellow sandstones; many of these blocks lay at an altitude of 2000 feet.

Despite the unattractive appearance of Payer Harbour, traces of Eskimo were found on its shores, in the shape of seven circles of stones that had been employed in fastening down the edges of the skin-tents which are used by that people as summer abodes. In their vicinity we picked up a few lichen-covered bones of animals, including a tooth of *Rangifer tarandus*, bones of a seal, and the jaw of a fox. At another spot we discovered the greater part of a sledge, the runners of which had been composed of wood and bone, and the cross-pieces of Narwhals' tusks, but so ancient that the exposed surfaces were exfoliated, and so brittle that they barely withstood transport to the ship. A harpoon tipped with a piece of ordinary hoop-iron was found at another camping spot, but the freshness of the traces showed that they belonged to a comparatively recent date. At the time we were somewhat puzzled to account for the presence of iron in the spear-head, which pointed to some intercourse with Europeans; but since reading the official account of the 'Polaris' Expedition,* it is quite clear that communication is kept up between the natives on both sides of the straits, and no doubt iron from Port Foulke has thus found its way to the inhabitants of Ellesmere land. Nothing certain is known about these people inhabiting Ellesmere Land and North Lincoln, and they still remain an interesting subject for the researches of Arctic explorers in the future.†

On Brevoort Island there was a breeding-place of *Larus glaucus*, which we visited. The young birds were in much the same state of plumage as those we found on the Cary Islands; they were nesting on ledges not more than twenty feet above the water and quite accessible. During the disturbance made by our intrusion on the breeding-haunt of the Glaucous Gulls, four Ivory Gulls, very likely nesting in the neighbourhood, made their appearance. One of these, a male, was secured; its iris was dark hair-brown,

* 'Narrative of the Polaris Expedition,' Washington, 1876, p. 451.

† I am indebted to Prof. Dickie, of Aberdeen, for some most interesting sketches of objects of Eskimo handiwork which were discovered by Dr. Philpotts in 1865, when excavating in an old "igloo" on Banks Island, near Cape Hosburgh. They consist of rude models of Eskimo women, Eider Ducks, and other objects carved in ivory, and a stone harpoon-head drilled to receive fastenings. Cape Hosburgh is situated near to the south entrance of Jones Sound. An examination of that channel would, I have no doubt, yield valuable results.

eyelid fleshy, and of a brick-red colour; tip of the bill gamboge-yellow, merging into ashy-grey on the culmen and base of both mandibles; legs and feet black. Their note is very shrill, approaching more to that of the Arctic Tern than to the harsh note of the Glaucous Gull. The stomach of the individual procured was full of red flesh, probably seal-meat. Eider Ducks were nesting numerous on Brevoort Island; three to four were the full complement of eggs; these were all deeply incubated by this date. A pair of Ravens wheeled overhead, and pounced down on the eggs of a duck that had been disturbed from her charge. A few Black Guillemots were fishing in the open pools; these, with a Snow Bunting found dead on the shore, completed the list of birds observed at Payer Harbour.

On the 4th August, Cape Sabine was rounded, and making our way to the westward through Buchanan Strait, we coasted for some miles along the north shore of Ellesmere Land, finally anchoring in a small bay, which was named Alexandra Haven. The rocks in that neighbourhood were gneiss, syenite and schists, with garnets. Not far from our anchorage a valley of considerable size debouched on the shore with a fine glacier at its head some three miles inland. A watercourse ran down the valley, issuing from the glacier; at the time of our visit it was a clear rapid brook, but during July, in the height of the thaw, it must be a large torrent, judging from the size of the channel, on the sides of which patches of *Epilobium latifolium* were in bloom, with yellow-blossomed *Vesicaria arctica*. Nowhere in Smith Sound did we find a better supply of grasses than in this valley, which accounted for our picking up numerous cast-horns of Reindeer, whilst the foot-marks of Musk-oxen were common, the long soft wool of these latter animals being observed sticking to the sides of the boulders, under which they had been sheltering themselves. In the pellets ejected by some bird of prey—no doubt the Snowy Owl—I found the bones and skulls of Lemmings, *Myodes torquatus*. Sections of the bank showed that the stream from the glacier had cut through thin strata of sand and mud, which were in parts much crumpled up—evidence that at the time of deposition they had been disturbed by grounding ice, pushed on shore, whilst the numerous shells of *Mya truncata* and *Saxicava rugosa*, scattered through the strata, were plain evidence of their submarine deposition.

Buchanan Strait, or Hayes Sound, was at this period of the

year filled with one season's ice, which had separated from the land and was now ready to drift to the eastward into the main channel. It was very interesting to note how many of these ice-rafts were covered with heaps of gravel, *débris*, and angular fragments of stone which had fallen from the cliffs when the floe-ice was in close proximity to the land. Whilst returning through this ice to the eastward we landed for a couple of hours on the north shore of Ellesmere Land. The coast-line, and to a height of seven hundred or eight hundred feet, is a schistose rock thickly studded with garnets; but the tops of the range are capped by a grey unfossiliferous limestone which weathers yellow. Along the shore line are the ruins of many Eskimo settlements; they appeared to be very ancient, and the numerous bones of animals lying around were lichen-covered. The skull of a Musk-ox and many of its bones showed that this animal had been utilized for food by the former inhabitants of the place. We found there a specimen of a gay-coloured butterfly, *Colias Hecla*, flying about, and we noted afterwards the same species ranged three degrees farther north. A single Ptarmigan, *Lagopus rupestris*, was secured whilst our party was on shore. We made our way out of Hayes Sound under steam and sail, a fresh wind blowing from the south-west. Many Black Guillemots and Little Auks were fishing in the lanes of water along which we sailed. We passed near enough to the southern shore of Bache Island to observe that at the water's edge red syenite or gneiss appears; but above it rises a grand mural cliff of limestone, which extends almost unbroken along its eastern shore as far as Victoria Head.

After leaving Hayes Sound and entering Smith Sound once more, our troubles with the ice recommenced, and a couple of days' unceasing battles, ramming and charging the floes, varied on more than one occasion by the imminent prospect of destruction to our ships, brought us close to Cape Victoria, where the ships lay for an hour or so in a pool of water. Captain Markham being despatched on shore to obtain an observation from an elevation, I was allowed to accompany him. It being low-water at the time of our visit, we found some difficulty in getting up the ice-foot, which at that stage of the tide presented a wall of ice some twelve feet above the water.

(To be continued.)

ON THE OCCURRENCE IN IRELAND OF THE LESSER
SNOW GOOSE, *ANSER ALBATUS*, CASSIN.

BY THE EDITOR.

It will be in the recollection of many of the readers of this journal that a few years ago Mr. Howard Saunders directed attention to the capture, in the County Wexford, of two Snow Geese, which having been forwarded to London for sale with other wild-fowl were fortunately rescued by him from oblivion. A third one, not preserved, was shot about the same time (November, 1871) in Wexford Harbour.*

I have now to report the re-appearance of what I believe to be the same species of goose in the County Mayo, and the capture of two examples under somewhat singular circumstances.

I first heard of the occurrence in August last, through my friend Mr. Henry S. Sweetman, whose name has been lately before the public in connection with the useful Calendar which he is preparing of Documents relating to Ireland in the Public Record Office, and a portion of which has been already published in the Master of the Rolls Series. As he was on his way to Ireland when he communicated the information to me, and was to spend some time in the Co. Mayo, in the very neighbourhood where the Snow Geese were procured, I begged that he would make sure that the birds in question were not Bernicles, and send me any particulars which he could collect concerning them. As he was personally acquainted with the gentleman who obtained them, Mr. J. R. Crampton, of Lake View, Belmullet, he found no difficulty in complying with my request, and shortly favoured me with the following note:—

“A flock of seven Snow Geese were seen on marshy ground in Termoncarra, in the Barony of Erris, about the end of October last. One of them was shot, and a second, a gander, trapped. After a time the latter was placed with some tame geese, and soon fraternised with them. He has now (August 26th) got quite tame, and may be seen leading a party of three dozen of his domesticated relatives, who follow him wherever he goes. He is rather smaller and more elegantly shaped than they are. Five or six of the principal feathers in each wing are black; with this exception he

* See Proc. Zool. Soc., 1872, p. 519.

is pure white; and on opening his bill a process resembling teeth is very noticeable."

Prior to the receipt of this note I had written to Mr. Robert Warren, of Moyview, Ballina, in the same county, whose practical knowledge of Ornithology rendered his assistance in the matter most desirable, and, being somewhat doubtful whether the species had been correctly identified, requested his opinion. He had not heard of the occurrence, and was inclined to think that on enquiry the birds would turn out to be Bernicles. Mr. Sweetman's description, however, of the pure white plumage seemed almost conclusive. Mr. Warren promptly instituted enquiries, and on the 31st August was enabled to send me the following letter from Mr. Crampton, dated the previous day:—

"From the description given in Cuvier's 'Natural History,' I think there can be no doubt as to the bird you refer to being the Snow Goose. With the exception of black tips to the wings the bird is snow-white; a little smaller than the common goose, and much more elegant in shape. He is now quite tame, and has assumed the leadership of our domestic flock, taking them long distances away in the mornings and returning to the yard in the evenings with remarkable punctuality."

In answer to enquiry as to the colour of the bill and feet, and the mode in which this bird was captured, Mr. Crampton obligingly replied, on September 2nd, as follows:—

"The goose is rather smaller than our land Bernicle. The legs and feet are the same in colour, but a shade darker and more livid looking than the common goose. The bill is much the same in colour as that of the common goose, perhaps a little brighter, but with a hard black enamel-like edging along the upper part of the lower mandible, and the same to a less degree on the upper one.

"As to the place and mode of capture, there is a large tract of wet reedy marsh between the lake and the sea, and within a few hundred yards of my house, much frequented in winter by ducks, geese, and occasionally swans. In this marsh, in the end of October last, I saw two strange white birds. After a wet stalk, I wounded and secured one. It lived in my garden for six weeks and then died. The day succeeding its capture the second bird was seen flying over the marsh, and it occurred to me to try and trap him, which I accomplished in the following way:—I had a space about six feet in diameter cleared in the centre of some

high reeds, and lined with a coil of wire-netting, which was well concealed. In this enclosed space the wounded bird was placed. I had a passage cut from the enclosure through the reeds, narrow at the end near the decoy-bird and very wide at the outside of the clump of reeds. At the narrowest part of the passage I had four rabbit-traps placed. Within two hours the bird returned and was caught. The wounded bird appeared to be a little smaller of the two, but in other respects I could see no difference. I did not save the skin, as it was much damaged before the bird died."

Such are the particulars which have come to hand concerning this very interesting capture. It remains only to decide to which of the species of Snow Geese the birds in question belong, the plumage of all being very similar.

Anser hyperboreus, Cassin, the largest of the three,—and the measurements of which are—wing, seventeen to eighteen inches and a half; tarsus, three to three inches and a quarter; and bill from forehead, two inches and a half,—is too large a bird to answer the description given of size.

Anser Rossii, Baird,* is as much too small, being no larger than a Mallard. Hearne says, in his 'Journal' (p. 442), "The flesh of this bird is delicate; but it is so small that I ate two one night for supper"!

Anser albatrus, Cassin, intermediate in size between these two, measures—wing, fifteen inches to fifteen and three-quarters; tarsus, two inches and seven-eighths to three inches; and bill from forehead, two inches to two inches and one-eighth. The birds shot in Wexford in November, 1871, were identified by Mr. Saunders with this species, and from the description given of those now under consideration it seems probable that they also are of the same species.† On this point, however, in the absence of measurements, one cannot speak with positive certainty. It is to be hoped that when the bird now in Mr. Crampton's possession dies, the owner will take immediate steps to have the skin preserved.

It is remarkable that the Snow Geese which visited the coast of Mayo in 1877 arrived about the same time as those which were met with in Wexford in 1871, namely, in October and November.

* It seems that the name bestowed or suggested by Prof. Baird was not published by him, but was adopted from his MSS. by Cassin, Proc. Philad. Acad., 1861, p. 73.

† The distinction between *Anser hyperboreus* and *A. albatrus* is chiefly one of size. Dr. Elliott Coues does not regard them as specifically different, but treats the latter as a smaller race of the former species. See his 'Birds of the North-West,' p. 549.

They would then be on their autumn migration, and in all probability were driven out of their course by the agency of adverse winds. In a great majority of cases the occurrence of American birds in England has been in the autumnal months. The clue to this, as Prof. Baird has remarked, will be found in a study of the laws of the winds of the northern hemisphere, as developed by the late Prof. Henry and Prof. Coffin.*

One or two points in connection with Mr. Crampton's Snow Goose deserve to be noted. The facility with which the bird became domesticated is remarkable, although this is not an isolated instance. Dr. Elliott Coues, in his 'Birds of the North West' (p. 551), quotes an account given by Mr. Ridgway of a Snow Goose, *Anser hyperboreus*, which had voluntarily become semi-domesticated at Mount Carmel, Illinois, and lived with a flock of tame geese for nearly a year. The bird had been crippled in the wing the preceding fall, but the wound, which was merely in the muscles, soon healed, and it escaped by flight. It flew about half a mile, and observing a flock of tame geese upon the grassy commons between the town and the river, alighted among them. It continued to stay with them, going home with the flock regularly every evening to be fed and enclosed in the barn-yard.

Another point to which attention may be directed is the singular form of the bill in this bird. The edges of each mandible have twenty-three indentations, or teeth as it were, on each side—a peculiarity specially noticed in Mr. Crampton's bird by Mr. Sweetman. The inside or concavity of the upper mandible has also seven lateral rows of projecting teeth, and the tongue, which is horny at the extremity, is armed on each side with thirteen long and sharp bony teeth, placed like those of a saw, with their points directed backwards. The design and use of these conspicuous *lamellæ* (common to other geese, but remarkably developed in this one) become evident when we know the bird's food and its manner of procuring it. It feeds, says Dr. Elliott Coues,† upon reeds, grasses, and other herbs, which it forcibly pulls up by the roots, or twitches in two. The shape and singular armature of the bill thus admirably adapt it for seizing and retaining firm hold of yielding plant-stems.

* See remarks on the occurrence in England of the American Red-breasted Thrush, 'Zoologist,' 1877, p. 16.

† 'Birds of the North-West,' p. 552.

NOTES ON SOME FISH AND CRUSTACEA RECENTLY OBTAINED IN CORNWALL.

BY THOMAS CORNISH.

THE following notes were made during a visit to Prussia Cove Marazion, east of Cuddan Point, Cornwall, where I spent the month of August last.

On the 24th of that month, by the kindness of Mr. Hamilton James, of Truro, I received a very excellent sketch of a dolphin, *Delphis delphinus*, the original of which had been shot with a rifle-bullet in the estuary of Truro River a few days before. The animal was eleven feet long, and of a girth of five feet six inches.

Of the common fish, we took Whiting-pollack (*M. pollachius*), Scad, Bream, Black Bream, Basse, Blind (*M. lusca*), Power-cod, Ballan-wrasse (male and female), Blue-striped Wrasse, Rock Gurnard (Streaked Gurnard, French Gurnard or Parson, *Mullus imberbis*), never taken on a hook), Red Mullet (*M. surmuletus*), Homelyn-ray, Burton Skate, Common Cod, Dory, Grey Gurnard, Smooth Hound (Ray-mouthed Dog), Turbot, Allice-shad, Blue Shark, Rock-cook, Grey Mullet, Conger, Ling, Whistler (Three-bearded Rockling), Atherine, Small-eyed Ray (*R. microcellata*, Bordered Ray, Painted Ray), Sole, Variegated Sole, Müller's Topknot, Angel-fish (Monk), Rough Dab, Plaice, Sand-eel, Gattorugine, Smooth Shanny, the Great Pipe-fish, and (in a pool having no communication whatever with fresh water) a Fresh-water Eel.

Of the rarer fish, I have taken the Boar-fish, and have had brought to me the Sword-fish, of which I have written to you (p. 351); and the occurrence in the bay of another uncaptured Sword-fish—said to be of larger size than the one taken—has been reported to me.

In addition to these, I have had two fish of extreme rarity, both captured in Mount's Bay. The first is the Derby, sent to me on August 20th by Mr. Mitchell, of the Western Hotel, Penzance. It was accompanied by the smallest mackarel I have ever seen. The dimensions of the Derby were—Over all seven inches and six-eighths; eye to fork, six inches; depth, two inches and two-eighths; length of head, an inch and five-eighths; lateral line curved high over the pectorals, then descending rapidly and running straight to the tail, strongly carinated as it approached the tail, and apparently, but not really, cross-braced and serrated. This specimen, though smaller than that described by Couch, agrees with his description

of the fish in every particular except one: he mentions the existence of several free spines in front of the dorsal; this specimen most certainly had none. Possibly this may be a sexual distinction.

The other rare fish is the "Wreck-fish" (Couch's Polyprion, *P. cernium*, called by Couch the "Stone Basse"), which was caught in Mount's Bay on the 24th August, and kindly sent to me by Mr. A. O. Mitchell, of Chymorvah (the friend who sent me the sword-fish). Its dimensions were as follows:—Over all twenty inches; eye to fork, twelve inches; depth six inches and five-eighths; weight, six pounds.* It will be seen from these measurements that this specimen was small. It agrees with Yarrell's description, and also with Couch's, except that I am certain that at the time I examined it—about eight hours after its capture—it had on its ventrals a first ray, spinous, but with no part of the spine free, and on the anals the three first rays spinous, but with the spines all similarly concealed by the membrane of the fin. Since then the skin of the fish has been dried in the process of preservation, and these rays, owing to the shrinkage of the fin membrane, all now appear as free. Its mouth was a perfect study; it was filled with beds of very small teeth, in, literally, every place on which a fish can carry teeth. They were not only in the jaws but on the vomer, the palatine bones, on the intermaxillaries, on the pharynx, and on the arches of the gills. On these latter, in addition to the small teeth, there were on each of the upper arches a regular row of spinous teeth, or spines, of about three-eighths of an inch long; on the second arch these became stumpy teeth, and on the third little knobs. The scale-rayed processes on the soft-rayed end of the dorsal, and on the ventrals and anals, were very apparent.

I took also one specimen of Yarrell's blenny, the first which I recollect having seen.

In crustaceans (stalk-eyed, I do not know much about the others) I did well,—I have already mentioned to you that I took Wrinkled Swimming Crabs of very small size,—Long-armed Munida, Andrews' Galathea, Long-legged Spider Crab, Common Spider Crab (of small size, but covered with sea-weed and corallines), and Long-horned Porcelain Crab. On this latter I made a curious observation. The first I had was taken in the ordinary way in a "pill" (or pool of

* On September 7th I received another specimen of this fish, within six hours of its capture on a hook and line. The spinous rays on the ventral and anal fins were all free.

water left by the receding tide), but the second was taken in deep water in my trammel, enclosed in a sort of nest made of sea-weed and sand, which had all the appearances of being worked up artificially. I noted of the hindmost pair of legs of this little crab that it never used them, or even displayed them whilst alive. They were kept tucked up under the back of the carapace (or close alongside of it), over the other legs, and were but very rarely moved, and never both together.

I had a second Long-legged Spider Crab from the deep water covered with little bits of sea-weed, not, I think, growing, but stuck on to it in some way. Most of the weed consisted of little fragments of some of the common *Delessariæ*. I took also the Common Crab (*C. pagurus*), the Lobster, the Cray-fish, the Velvet Swimming Crab (the Blue Harry, *P. puber*), and on my last day the rare swimming crab, *Portunus Holsatus*, the Livid Swimmer. The specimen was in excellent condition, and I saved it out of my trammel whole, but some rough handling has since unfortunately crushed in the back part of the carapace. I had also *Xanthus florida* and *rivulosa* (in my opinion varieties of the same crab), and the Common Shore Crab. On the 22nd August we observed from the shore a shoal of some sort of fish passing in the very unusual direction of from east to west. It appeared to be broad and of about a half a mile in length. I afterwards learned from a boat which passed through it that it was a shoal of large-sized jelly-fish, probably *Rhizostoma Cuvieri*, the most common jelly-fish on our coast, and of which I took two or three specimens in the course of the month.

Early in the month I took the Common Cuttle-fish, *Eledone octopodia* of Leach and Gosse, and *Loligo piscatorum* of Rymer Jones. After that I took the Bomb Cuttle, so called, I believe, from the resemblance of its sac to a bomb or mortar. This I consider to be *Sepia officinalis*, and to have by some writers been confounded with *Eledone* and *Loligo*, but it is quite distinct. Both have sepia-bags, and are consequently occasionally nuisances from their habits of "squirting ink," but a clear distinction is that the backbone of the Cuttle-fish (which I regard as *Eledone* and *Loligo*) is horn-like and semitransparent, whilst that of the Bomb Cuttle (which I take to be *Sepia officinalis*), is the white opaque substance known to every one as the backbone of the Cuttle-fish. There are other exterior and clear distinctions to which I need not now refer.

The event of my month at Prussia Cove, however, was the capture of an Octopus, *O. vulgaris*, in my trammel on August 24th. It was brought in alive and placed by my people in a "pill." It was about three feet and a half long over all, and about six pounds weight. I took it out and showed it to some friends, and whilst doing so two or three of its arms (with their 240 suckers each) were twined closely around my right hand and fore arm. I felt nothing more than a strong sucking action, and after about five minutes I put the creature into another and larger "pill," in which it swam about with a most graceful action until it found a hole under a large stone, into which it crept, arms foremost, and, turning round and using its suckers as hands, it lifted or handed out several large stones, one of nearly three pounds weight, and made a sort of nest for itself, and there rested until the coming tide enabled it to escape. This creature has no backbone (none at least perceptible to the touch), and I judge, and am told, that it has no sepia-bag. Under all the rough treatment which it received it never "squirted ink," although it constantly ejected water. Its respiratory tubes were very interesting. There were two on each side, and it could apparently work them at pleasure, but the expiration was always performed by those on one side and the inspiration by those on the other. This was whilst the animal was at rest. Whilst swimming I think all four tubes were at work, and that the force which propelled it, tail foremost through the water, was derived from the gentle injection and forcible (by muscular power) ejection of water through them. About two hours after I had handled this beast I felt a numbness in the little finger of my right hand, as if I had hit my funny-bone. This increased until in about twelve hours my arm was numbed to the shoulder. On the next day it was worse, and I could not use it at all. Since that time (now ten days ago) it has been gradually recovering, and I can now write. I have no pain, but only a sensation of numbness and want of power, my general health not being affected.

Since writing the above I have had brought to me from Prussia Cove a specimen of Pennant's Globe-fish, *Tetraodon stellatus*, found dead on the beach there after a gale of wind. It is remarkable that more than half of the few recorded instances of the occurrence of this fish have happened between the Lizard and Trevoise Head.

I may also mention the Nipper Crab, *Polybius Henslowii*, as not uncommon at Prussia Cove, although I obtained none this year.

PROVINCIAL NAMES OF BRITISH ANIMALS

Stewartry of Kircudbright.—

Bats. Always spoken of with the prefix <i>Blin'</i> .	Tree Pipit. <i>Tree Lark</i> .
Mole. <i>Moudie</i> or <i>Moudie-warp</i> .	Meadow Pipit. <i>Moss-cheeper</i> and <i>Titlark</i> .
Hedgehog. <i>Urchin</i> .	Sky Lark.† <i>Laverock</i> .
Shrew. <i>Screw-mouse</i> .	Common Bunting. <i>Corn Bunting</i> .
Badger.* <i>Brock</i> .	Yellow Bunting. <i>Yoit</i> or <i>Yeorlin</i> .
Polecat. <i>Foumart</i> .	Chaffinch. <i>Shelfa</i> , <i>Snabby</i> , <i>Briskie</i> , and <i>Brichtie</i> .
Weasel. <i>Game Rat</i> and <i>Whitrick</i> .	Brambling. <i>Cock-o'-the-North</i> .
Porpoise. <i>Pellick</i> (Solway Firth).	House Sparrow.† <i>Spyng</i> and <i>Sprug</i> .
Common Hare. <i>Bettie</i> .	Greenfinch. <i>Green Lintie</i> .
Lizard and Newt. <i>Asp</i> or <i>Ask</i> . Supposed to be venomous.	Goldfinch. <i>Goldie</i> and <i>Goldfinch</i> .
Slow-worm. <i>Blind-worm</i> .	Linnet. <i>Whin-lintie</i> .
Frog. <i>Paddock</i> .	Chough. <i>Red-legged Crow</i> .
Peregrine Falcon. <i>Game Hawk</i> and <i>Hunting Hawk</i> .	Carrión Crow. <i>Corbie</i> .
Kestrel. <i>Keelie</i> .	Hooded Crow. <i>Hoodie</i> .
Buzzard. <i>Gled</i> .	Rook. <i>Craw</i> .
Owls. <i>Hoolets</i> .	Jackdaw. <i>K'ya</i> .
Dipper. <i>Water Pyet</i> .	Magpie. <i>Pyet</i> .
Missel Thrush. <i>Feltie</i> .	Jay. <i>Jay-pyet</i> .
Fieldfare. <i>Storm-cock</i> .	Wren. <i>Cuttie</i> .
Song Thrush. <i>Mavis</i> .	Cuckoo. <i>Gowk</i> .
Ring Ouzel. <i>Mountain Thrush</i> .	Swift. <i>Black Swift</i> .
Hedgesparrow. <i>Hempie</i> and <i>Creepie</i> .	Nightjar. <i>Night-hawk</i> .
Redstart. <i>Red-tail</i> .	Ring Dove. <i>Cushie</i> and <i>Cushat</i> .
Whitethroat. <i>Cut-throat</i> .	Partridge. <i>Paetrick</i> .
Willow Wren. <i>Yellow Wren</i> .	Quail. In the neighbouring county of Wigtownshire, where it occurs occasionally, this bird is called <i>Wet-my-feet</i> , in allusion to its cry.
Great Tit. <i>Black-cap</i> .	
Blue Tit. <i>Ox-e'e</i> and <i>Blue-bonnet</i> .	
Long-tailed Tit. <i>Bell-ringer</i> .	

* A year or two ago almost extinct in the Stewartry, except in Glenkens. Colonel Blackett, of Arbigland, however, turned out some in the parish of Kirkbean; and young ones, I am informed, were seen a month or two ago.

† Laverocks have almost disappeared from the parish of Traquair, in which I live. This, without doubt, is caused by Starlings, who destroy their eggs. The increase of Starlings during the last twelve or thirteen years has been most marked, and noticed by the most casual observers. When I was a boy the Starlings nested at only three places in the whole parish, but now there is scarcely a chimney, church-steeple, or garden-wall in the county where their nests are not to be found. [What evidence is there that Starlings destroy Larks' eggs? We are acquainted with many localities in which both species abound.—ED.]

‡ At Wanlockhead (1200 feet above sea-level), a mining village on the borders of Dumfriesshire, the Sparrow is quite unknown. [See Yarrell's 'British Birds,' 4th edition, vol. ii., p. 94, note.—ED.]

Lapwing. *Tee-wheet*.

I have also heard this bird named the *Shochan* by shepherds and keepers who were natives of, or had resided in, the Highlands. I believe it is the Gaelic name of the Lapwing.

Oystercatcher. *Sea-pyet*.

Common Heron. *Craigie*, and sometimes *Jenny Heron*.

Craig is an old Scotticism for throat, and probably the bird has been so named on account of its long neck.

Bittern (nearly extinct in this county now). *Bog-drum*.

Common Curlew. *Whaup*.

In country houses when children have been whistling, I have heard their parents order them to "stop their *whaupin*."

Common Sandpiper. *Kittineedie*.

Snipe. *Heather-bleater*.

Dunlin. *Purre*.

—ROBERT SERVICE (Corberry Hill, Maxwelltown, N. B.).

Landrail. *Corn-crake*.

Waterhen. *Stankie*.

In this district a still deep piece of water is called a *stank*.

Coot. *Bald Coot*.

Sheldrake. *Stock-annet*.

Teal. *Jay-teal*.

Cormorants. *Cow'en Elders*, and in Wigtonshire *Mochrum Elders*.*

Tern. *Sea Swallows*.

Black-headed Gull. In the eastern parishes of this county this bird is known as *Collochan Gull*, from the name of a loch where it breeds in some thousands.

Common Gull. *Sea Maw* or *Mar*.

Herring Gull. *Cat-gull*.

These gulls are detested by the keepers, and have probably earned their name and character by their cat-like depredations amongst the newly-hatched young birds and eggs on the moors.

Yorkshire, West Riding.—As supplementary to my list of provincial names used in this district (p. 331), I may add the following:—

Mole. *Mouldwarp*.

Rat. *Ratton*.

Whinchat. *Hay-chat*.

Stone-loach. *Tommy-loach*.

Miller's-thumb. *Bull-head*.

Lizards and Newts. *Askers*.

Tadpole. *Bull-head*.

Ladybird. *Cow-lady*.

Cockroach. *Black-clock*.

Dragonfly. *Horsetang*.

Doubtless a corruption of "Horse-stinger," from its supposed habit of stinging horses.

Tortoiseshell and Red Admiral Butterflies. *Scotch Nannies*.

Crane-fly. *Tom-spinner* and *Daddy Longlegs*.

—G. T. PORRITT (Highroyd House, Huddersfield).

* Colvend (pronounced Cow'en by the natives) is a coast parish much frequented by these birds, and Mochrum is a loch where one of their great breeding-places is situated. Perhaps their present appellation was bestowed on the Cormorants by our Presbyterian forefathers in the days when the Kirk Session held supreme sway in rural places, and might be one way in which the people showed their dislike to its somewhat inquisitorial functions.

Yorkshire, West Riding.—The following local names of birds are in currency in the West Riding of Yorkshire, and have all come under my own personal observation :—

Kestrel. <i>Stand-hawk.</i>	Yellowhammer. <i>Yoldring.</i>
Sparrow-hawk. <i>Blue-hawk.</i>	Chaffinch. <i>Bulspink.</i>
Missel Thrush. <i>Churcock.</i>	Goldfinch. <i>Goldspink.</i>
Fieldfare. <i>Blue-tail.</i>	Linnet. <i>Red Linnet.</i>
Ring Ouzel. <i>Crag Ouzel.</i>	Lesser Redpoll. <i>Chevvy Linnet.</i>
Hedgesparrow. <i>Dunnock.</i>	Twite. <i>Grey Linnet.</i>
Whinchat. <i>Grasschat.</i>	Starling. <i>Shepster.</i>
Wheatear. <i>Stonechat.</i>	Rook. <i>Crow.</i>
Sedge Warbler. <i>Willow Sparrow.</i>	Magpie. <i>Pianet.</i>
Whitethroat. <i>Straw-small.</i>	Swift. <i>Whip; Devil-bird.</i>
Wood Wren. <i>Haybird.</i>	Nightjar. <i>Night-hawk.</i>
Willow Wren. <i>Peggy.</i>	Lapwing. <i>Tuit.</i>
Blue Titmouse. <i>Bluecap.</i>	Heron. <i>Heronseugh.</i>
Ray's Wagtail. <i>Seedfore.</i>	Common Sandpiper. <i>Sand-snipe.</i>
Meadow Pipit. <i>Moor-tit.</i>	Landrail. <i>Grass-drake.</i>

The Wheatear is invariably called “Stonechat.” Whenever the nest of the Garden Warbler, Blackcap, Sedge Warbler, or White-throat is alluded to, it is designated “Straw-small,” in allusion, I suppose, to its flimsy structure. The name “Twite” is frequently bestowed upon the Meadow Pipit. Various local names are applied to the Linnet. Occasionally a male is met with in the breeding-season without the carmine tinge on the breast and forehead, and in a plumage similar to what it bears in winter; these are named “Grey-birds”; sometimes a few are caught at the same season with a yellowish hue on the breast—these are called “Lemon-birds”; so far as I have had the means of ascertaining, they are somewhat larger than the normal size of the red-breasted specimens. Both the Rock and Ring Doves are called “Wild Pigeons.”—E. P. P. BUTTERFIELD (Wilsden).

South Hampshire.—

Squirrel. <i>Skuggy; Charlie.</i>	Sand Lizard. <i>Evet.</i>
Bat. <i>Ranny-mouse.</i>	Water Newt. <i>Water-evet.</i>
Badger. Sometimes <i>Brock</i> or <i>Bruck</i> , but generally “Badger.”	Hobby. <i>Van-winged Hawk.</i>
Miller's-thumb. <i>Noggle-head.</i>	Kestrel. <i>Windhover.</i>
Loach. <i>Lie-still.</i>	Hen Harrier. Male, <i>Grey Buzzard.</i>
Stickleback. Male, <i>Firey-lock</i> ; fe- male, <i>Enemy-chit.</i>	Red-backed Shrike. <i>Pope; Butcher- bird.</i>
	Spotted Flycatcher. <i>Wall-bird.</i>

Missel Thrush. *Storm-cock*; *Bull-thrush*.

Redstart. *Fire-tail*.

Stonechat and Whinchat. *Furze-hacker*.

Wheatear. *Horse-masher*.

Sedge Warbler. *Channy*; *Cham-chider*.

Whitethroat. *Nettle-creeper*.

Golden-crested Regulus. *Thumb-bird*; *Golden-cutty*.

Blue Tit. *Tom-tit*; *Bee-biter*.

Long-tailed Tit. *Long-tailed Capon*; *Bottle-tit*.

Pied Wagtail. *Molly Wash-dish*.

Yellow Wagtail. *Yellow Molly*.

Meadow Pipit. *Titlark*; *Meadow Lark*.

Black-headed Bunting. Male, *Black-cap*; female, *Spear-sparrow*.

Chaffinch. *Chink*; *Chiffey*.

Hawfinch. *Berry-breaker*.

Linnet. *Red Linnet* or *Brown Linnet*, according to the sex or season of the year.

Bullfinch. *Bullie*.

Siskin and Lesser Redpoll. *Aberdavine*.

This name is applied to both species, but more generally to the former.

Hooded Crow. *Grey-back*.

Green Woodpecker. *Yaffingale*; *Wood-knacker*.

Spotted Woodpecker. *Wood-pie*.

Lesser Spotted Woodpecker. *Little Wood-pie*.

Wryneck. *Cookoo's-mate*; *Snake-bird*; *Little eten bird*; *Weet-bird*; *Barley-bird*.

Wren. *Cutty*.

Nuthatch. *Mud-stopper*.

Swift. *Screecher*; *Black Martin*.

Nightjar. *Night-hawk*; *Gnat-hawk*.

Pintail. *Sea-pheasant*.

Pochar. *Poker*; *Red-headed Curre*.

Tufted Duck. *Black Curre*.

Little Grebe. *Dabchick*; *Di-dapper*.

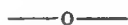
Guillemot. *Spratter*.*

Cormorant. *Isle-of-Wight Parson*.

Tern. *Sea-swallow*.

—G. B. CORBIN (Ringwood, Hants).

ERRATA.—In my few words on the Worcestershire names of birds, p. 385, for Hazeck read Hazock, and for Spait read Chait.—W. H. HEATON.



ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

AT midsummer the nesting operations of the Herring Gulls at Wembury were in full swing, and many eggs and young birds in the down might be seen from the summit of the cliffs. I am sorry to say numbers of nests were robbed, and I fear some of the old birds shot, judging from the fresh cartridge-cases which were lying about, and from the dead birds which were constantly picked up alongshore.

* This name is often applied to the Red-throated Diver.—ED.

More young Ravens were brought to a Plymouth dealer in live birds. He had lost an old one which had been in his possession for upwards of twenty-five years. It was a famous talker, as an illustration of which I may mention a rather amusing incident which occurred to me not long since. Mr. Rogers, the owner of this Raven and a dealer in various objects of Natural History, had a large Fox Shark or Thrasher, *Squalus vulpes*, brought to him one Saturday night, and as it was to be sent away early on the following Monday morning, to be preserved or to have a cast taken from it, I called on Sunday to ask if I might be allowed to make a sketch of it. My request was readily granted, Mr. Rogers telling me that I could go through the passage into a back court, where I should find the fish lying on the pavement, and there would be no one to disturb me. I accordingly followed his direction, and had just begun operations when I was rather startled by a gruff voice exclaiming "Who are you?" On looking round and seeing no one I proceeded with my sketch, when the voice again demanded, in a more peremptory manner, "Who are you?" I was now beginning to feel a little awkward and annoyed, but on turning quickly round on the third challenge, much to my surprise and amusement, I found it was none other than the old Raven, which I had not before noticed. I am well aware that talking birds have no idea of the meaning of what they say; but, under the circumstances I must confess that the question was, at least, most appropriate and well put. Whilst on this subject, I may perhaps be allowed to mention a little anecdote concerning a Parrot. When attending a crowded sale-room in which an excellent talking Grey Parrot was to be sold, the auctioneer, after having exhausted his vocabulary in extolling the merits of this wonderful bird, added, "Of course, ladies and gentlemen, you cannot expect it to talk in a room so crowded with strangers, but I can give you my word that it is the best talker in the West of England," and after dwelling a long time on the last bid, "Going, going, gone!" down went the hammer with a bang, upon which the bird instantly exclaimed "There now!"

On July 22nd I visited Bovisand, where I met with five Ravens, a whole family, and afterwards heard others. I was pleased to hear from a friend who is well versed in Ornithology that he had then lately seen more than a dozen Cornish Choughs and three Common Buzzards about the cliffs on the coast of Cornwall.

On July 26th, Herring Gulls were still at Wembury, and Curlews were plentiful on the mud-banks of our rivers and estuaries. A friend told me that when fishing on Dartmoor he had found several nests of the Common Sandpiper this summer, one of which was close under the shelter of a furze-bush.

An adult Peregrine Falcon was taken in the neighbourhood of Plymouth. It was a small male, and beautifully marked, with the white extending further down on the breast, and purer than I remember to have observed in any previous specimen. The spots and bars, too, were unusually small. Its stomach was supposed by the birdstuffer to contain some remains of a pheasant.

In August, the first young Herring Gulls were to be seen in the Sound; but many, I am sorry to say, were being daily shot. A few Wheatears appeared on the coast from their inland quarters, and I also heard a few Whimbrels which appeared to have returned from their breeding-haunts rather earlier than usual.

I think the past summer must have been a good season for young Kingfishers, for I saw many on the estuary of the Laira at the entrance of the River Plym. By the middle of the month Cormorants were to be seen daily ascending our rivers and estuaries of a morning to fish, returning at eve in small flocks like wild geese, most of them showing the white belly peculiar to this time of the year.

On August 22nd our harbours were full of both old and young Herring Gulls, and I observed some Black-headed Gulls just returned from their breeding quarters and many Whimbrels. A Manx Shearwater was brought to one of our birdstuffers about this date. Common Redshanks and a few young Sanderlings, with their prettily mottled backs, were to be met with on the coast.

A short time since my attention was called to a case which, I fear, is but too frequent, of young Sparrows and other small birds being dragged out of their nests and being killed by Jackdaws. I recollect having recorded similar instances in 'The Zoologist' a few years ago.

On the 1st September there were several flocks of old Ring Dotterels with very black collars on the mud-banks of the Laira; but, strange to say, I did not detect any young ones amongst them, although I examined them carefully with a powerful telescope.

A young white Spoonbill was recently shot, I believe on the River Tavy, and was to be seen with Mr. S. Hodge, of Ford Street, Tavistock, by whom it had been preserved. Jack Snipes made their appearance on Dartmoor unusually early this autumn. Two were killed on September 17th, and I saw others that were brought in a few days later.

Numbers of Knots and other small waders were observed on the Plymouth Breakwater; and I was glad to see some young Razorbills on the coast in the vicinity of Plymouth, they having become scarce within the last few years. Young Herons seemed to be plentiful this season: they were fishing among the rocks on the open sea-coast, and were in many rather out-of-the-way places. A pair of Buzzards which have nested for years in the woods of Kelly, on the banks of the Tamar, have this year reared a brood of four, and I am glad to say that the owner of the estate never allows his keeper to molest them. The Turtle Dove, a very uncommon species in that part of Devon, has also bred in the same locality.

The keeper at Wembury informs me that the Peregrine still frequents the cliffs of that neighbourhood, and related the following circumstance:—While watching some old and young Pheasants feeding, a Peregrine suddenly appeared to come out of a bush or thicket, seized and carried off a Pheasant before his eyes, and was over a bank and down among the cliffs before he could get the chance of a shot or even put the gun to his shoulder. He then told a somewhat similar story concerning a Sparrowhawk, which ended, however, in a different manner with the hawk. Having seen a Sparrowhawk glide swiftly along and suddenly alight, as he thought, on the other side of a hedge, he cautiously crept up and peeped over, when to his surprise he beheld the hawk on the ground amongst a lot of Pheasants, which he seemed to be eyeing intently, they keeping perfectly still and looking fixedly at him. After waiting some time and seeing no movement he resolved to kill the hawk, even at the expense of a Pheasant, and accordingly secured it, killing one Pheasant at the same shot.

OCCASIONAL NOTES.

VARIETY OF THE WEASEL.—A short time since a curious variety of the common Weasel, *Mustela vulgaris*, was brought by a gamekeeper to one of our animal preservers here. In colour it was a very light buff, altogether different from the usual tint of the animal. Its large size was also remarkable, being eleven inches and a half long, including the tail, which measured two inches and a half. There can be no doubt of its being a Weasel, from the uniform colour of its tail, which in any variety of the Stoat, *M. erminea*, would show some signs of the dark tip.—JOHN GATCOMBE (Lower Durnford Street, Stonehouse, Devon).

BLACK HARE IN IRELAND.—We have received for preservation a variety of the Common Hare, which is perfectly black in colour. It was shot in the neighbourhood of Belturbet; but was unfortunately too much injured for preservation.—WILLIAMS & SON (Dame Street, Dublin).

[In November, 1853, a black Hare was coursed and killed at Enville, the seat of Lord Stamford.—ED.]

ORNITHOLOGICAL NOTES FROM ALDEBURGH, SUFFOLK.—The waders which visit our eastern coast in their southward migration appeared earlier than usual this year. On July 27th two Curlew Sandpipers, or Pigmy Curlews, in summer plumage, which had been shot close to the Haven at Thorpe, were brought to me. Curlews and Whimbrels have been plentiful about the river, and several Wood Sandpipers have frequented the first mere. The “fighting” in the neighbourhood of Aldeburgh has been almost entirely spoiled this year, owing to the cruel (and certainly illegal) pinioning of a large number of young wildfowl, with a view to prevent their straying from the place where they were bred. A fine male Eared Grebe, in perfect dress, was shot in the river near the Martello Tower on the 3rd August; this is the first time it has been obtained here in full plumage. Walking along shore from Dunwich to Aldeburgh, on August 8th, I met with an immense flock of Terns off Sizewell: the Common and Lesser species seemed to be about equal in numbers, and among them I observed a single Black Tern. As they rose from the beach, uttering their peculiar cry in chorus, and wheeled to and fro over the dark blue sea in the bright sunshine, continually crossing and re-crossing one another, they presented a scene as exquisitely pretty as any lover of birds could desire to behold. I was at once reminded of that most interesting sight which the Eastern

Counties can afford to an ornithologist—the great colony of Black-headed Gulls at their breeding-place at Scoulton Mere. The Terns are certainly becoming more numerous on the Suffolk coast. I was told that one day this year more than one hundred eggs were found on the Lighthouse Beach by a single man. They used also to breed at Thorpe; I had an egg given me which was found there this year. A graphic and interesting account of the breeding habits of the Terns is to be found in Mr. N. F. Hele's 'Notes about Aldeburgh,' pp. 167–69. — JULIAN G. TUCK (St. Mary's, Cardiff, South Wales).

EARLY APPEARANCE OF THE JACK SNIPE.—On August 28th I shot a Jack Snipe on Gourock Moor. A friend, who has a moor in Argyleshire, told me that his party had bagged two or three Jack Snipes a few days earlier still. It would thus appear that a few of these small snipe arrive in Scotland as early as the latter end of August. On Dartmoor the 10th September was an average date for flushing the first Jack. On some salt marshes near Barnstaple I have seen Jack Snipes on September 3rd. The keeper on the Gourock Moor told me that he had seen a Jack Snipe all through the summer on the little bog from which I bagged one on the 28th August. On September 2nd, being again on the Gourock Moor, I shot a Ruff. At the beginning of last summer I received a very fine adult male Squacco Heron, which had been killed in North Devon; and about the same time a nondescript goose was sent me, which was shot in a wild state near Barnstaple. This I forwarded to London, not being able to decide what it was; and have since been informed by Mr. Dresser that it is a hybrid between the Muscovy Duck and common farm-yard Grey Goose. It is a very handsome bird.—MURRAY A. MATHEW (Bishop's Lydeard).

[A Jack Snipe was shot in Cardiganshire by Mr. Willis Bund on the 26th August, an unusually early date for the appearance of this little bird.—ED.]

BERNICLE GEESE AT RINGWOOD.—From the beginning of March till near the end of April, a small flock of four or five of these birds was often seen upon various parts of the extensive heaths in this neighbourhood; and although apparently shy of man's approach, yet on one or two occasions they evinced a desire to form an acquaintance with some tame geese at a farm on the borders of the heath, but I believe they never actually joined company with them, though sometimes—especially in the early morning—they would hover near the vicinity of their tame relations, at which the latter, by their manner and clangour, seemed highly indignant. Possibly had they been more agreeable the wild birds would have joined them. At the beginning of April, however, one of the number was picked up, almost dead, near one of the ponds upon the heath. It was in exceedingly poor condition as to flesh, but the plumage was clean and bright; it seemed

almost as if the bird had been starved to death. The other birds stayed about the locality several weeks after the death of their companion, but disappeared about the end of April. Is it customary for this species to stay in the south so late in the season, and to frequent such a locality, which, to say the least of it, must be several miles from the sea? The bird that was picked up, although in such a lean condition, weighed between five and six pounds, if I remember correctly.—G. B. CORBIN (Ringwood, Hants).

NESTING HABITS OF THE KESTREL AND SPARROWHAWK.—The observations of Mr. C. Matthew Prior (p. 346) coincide with mine. I found two nests of each of these species this year. The Kestrels laid five eggs each in Magpie's old nests, while the Sparrowhawks built theirs, one in a Scotch fir, the other in a larch, and each nest contained five eggs. The Sparrowhawk, I think, uses the same nest for one year only. On approaching the nests of these birds I could not help being struck with the different behaviour exhibited by the two species under the same circumstances, and I should be glad to know whether the same has been observed before. On striking with a stick the foot of the trees containing the Kestrels' nests, both birds almost instantly quitted them. But, as one might expect from their bold and fearless nature, the Sparrowhawks acted very differently. Although I smartly struck the trees five or six times, both birds remained sitting, and it was only when an expert climber, who accompanied me, had swarmed the trees to a height of about five or six feet from the ground that the birds were induced to leave their nests. This they did with loud cries, while the Kestrels flew away noiselessly. I may mention that the eggs of one of the Sparrowhawks were very different from those of the normal type in size and coloration.—WILLIAM W. FLEMING (18, Upper Fitzwilliam Street, Dublin).

GREAT SHEARWATER, &c., AT NORTH BERWICK.—It may interest readers of 'The Zoologist' to know that my father, Mr. Robert Chambers, while shooting near North Berwick, on the 27th August last, procured a fine specimen of the Great Shearwater, *Puffinus major*. The bird when first seen was resting upon a piece of wreckage, and appeared to be comparatively tame, allowing the boat to make a near approach. This is the first occurrence of the species, so far as I can discover, in the Forth. In Dr. Turnbull's book on the 'Birds of East Lothian' no mention is made of it whatever. On the same day Mr. Chambers procured several specimens of Richardson's Skua, *Lestris Richardsonii*, a bird which is especially common this year. Several Kuots were also obtained, still retaining a considerable portion of the red plumage. Throughout the month of August a great many examples of the Manx Shearwater, *Puffinus anglorum*, had been repeatedly observed in the neighbourhood of the Bass Rock and other localities. Two were shot on the 26th, and several others on the 28th.

This is the first reported occurrence of the species in East Lothian for many years.—C. E. S. CHAMBERS (239, High Street, Edinburgh).

[Mr. Robert Gray, in his 'Birds of the West of Scotland,' p. 500, says, "On the eastern shores of Scotland the Fulmar ranks only as a straggling winter visitant. In East Lothian it is occasionally found in December and January. I have seen specimens that were cast up dead on the beach near Dunbar."—ED.]

RED-BACKED SHRIKE IN IRELAND.—A male specimen of the Red-backed Shrike, *Lanius collurio*, came into my possession on the 12th August last. It was shot on the 10th of that month at a glen near Castlereagh, Co. Down, about three miles from Belfast. It was said to have been one of a party of five or six. The contents of the gizzard were common horse-beetles. I have no record of any Irish-killed specimen before this.—THOMAS DARRAGH (Belfast Museum).

[So far as we are aware, this is the first recorded instance of the occurrence of the Red-backed Shrike in Ireland.—ED.]

THE EGG OF OWEN'S APTERYX.—I should be obliged if any of your readers would refer me to recorded or other specimens in Museums or private collections of the egg of the small South Island Apteryx of New Zealand, *Apteryx Owenii*.—J. A. HARVIE BROWN (Dunipace House, Larbert, N. B.)

WRYNECK IN PERTHSHIRE.—On the 6th September I had a specimen of the Wryneck brought to me by a lad who caught it on the bank of the Caledonian Railway near here. It was an adult bird and in good condition, having evidently feasted on ants previous to being taken. I have it preserved and in my collection. This is, so far as I can learn, its first appearance in this county.—THOMAS MARSHALL (Stanley, near Perth).

A HEN SWIMMING.—A hen, the property of Mr. A. Crush, of Mountnessing Hall, Essex, in its anxiety for the safety of a brood of young ducks which it had hatched, has successfully mastered the art of swimming, and may be seen floating about with the ducklings on the pond near the house, apparently quite at home.—F. KERRY (Harwich).

SABINE'S GULL IN IRELAND.—A very perfect specimen of this rare gull was shot on the coast of Donegal, on the 19th September, and has been forwarded to us for preservation. It is in an immature stage of plumage—evidently a bird of the year.—WILLIAMS & SON (Dame Street, Dublin).

EARLY ARRIVAL OF THE SNOW BUNTING.—Two old male Snow Buntings, shot on the 21st September, have been sent to us from Dingle, Co. Kerry; another was seen at Malahide, Co. Dublin, on the 29th.—ID.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

September 4, 1878.—FREDERICK SMITH, Esq., Vice-President, in the chair.

Mr. David Price, of West Street, Horsham, Sussex, was ballotted for and elected an Ordinary Member. Capt. Thomas Broun, of Whangarei Heads, Auckland, New Zealand, was ballotted for and elected a Subscriber.

Mr. D. G. Rutherford exhibited two specimens of an Orthopterous insect, *Palophus Centaurus*, Westw. (originally described from Old Calabar), taken on Mount Camaroons, at an elevation of 6000 feet. The species is nocturnal in its habits, and is remarkable on account of its very perfect resemblance to the twigs of the tree which it frequents.

Mr. Meldola stated that, while on the subject of protective resemblance, he would remark with reference to Mr. Rutherford's exhibition of *Aterica Meleagris*, made at the last meeting, and Mr. Jenner Weir's suggestion that a similar mode of variation might be found to hold good in *Hipparchia Semele*, that having recently obtained a long series of this last butterfly from the sand-hills at Southport, in Lancashire, he had compared the under sides with those of a series from the chalk at Caterham, but no perceptible difference of colour could be observed.

Mr. Weir remarked that he had detected in a British collection some specimens of *H. Semele* which had been taken in Jersey, and that these were darker than specimens from the chalk. With regard to moths, he stated that it was well established that certain species, such as *Gnophos obscurata* and *Eubolia bipunctata*, exhibited a tendency to local variation in colour.

Mr. W. C. Boyd stated that he had observed specimens of *Hepialus lupulinus* from Margate to be whiter than usual.

Mr. F. Smith exhibited a specimen of the so-called "locust-tree" (*Hymenea coubaril*), from British Guiana, forwarded to Dr. Sharp by Mr. Harper. On opening the fruit it was found to contain three living specimens of a weevil (*Cryptorhynchus stigma*, Linn.), a cocoon containing the chrysalis of a moth, together with the remains of one or more such cocoons, and lastly a small parasitic hymenopteron (an ichneumon allied to *Chelonus*). The small puncture by which the eggs of the weevil were probably introduced could be seen in the shell of the nut, but no trace of any other opening. Mr. Smith also stated that Mr. Harper was taking steps to secure information concerning the curious "trap-door bee," the habits of which had formed the subject of an article in 'Household Words' many years ago (vol. ii., p. 353).

Mr. G. C. Champion exhibited a series of *Spercheus emarginatus* taken at West Ham, Essex.

Mr. John Spiller, who was present as a visitor, exhibited some seeds received from Mexico which had the peculiar property of jumping about, in consequence of their enclosing the larvæ of a small moth. They continued to exhibit their remarkable movements for a period of at least three months.

Mr. S. Stevens stated that he had possessed some of the "jumping seeds," and had bred the moths from the enclosed larvæ, which had turned out to be a species of Tortrix, *Carpocapsa saltitans* (see also Trans. Ent. Soc., 2nd series, vol. v., p. 27).

The Secretary exhibited a photograph of *Prodryas Persephone*, Scudder, a fossil butterfly in a wonderfully perfect state of preservation, found in the tertiary formations of Colorado. The photograph had been forwarded to the Society by Mr. Scudder.

Mr. A. H. Swinton communicated a paper "On the Vocal Music and Wing-beating of Insects."

Mr. C. O. Waterhouse read a paper entitled "Notice of a small Collection of Coleoptera from Jamaica, with Descriptions of New Species from the West Indies."

October 2, 1878.—H. W. BATES, Esq., F.L.S., F.Z.S., President, in the chair.

Mr. Thomas Nottidge, of Ashford, Kent, was ballotted for and elected a Member. Mr. J. Lawrence Hamilton, M.R.C.S., of 34, Gloucester Terrace, Hyde Park, was ballotted for and elected a Subscriber.

Mr. Jenner Weir exhibited specimens of *Hipparchia Semele* from the New Forest, Lewes, the Rigi, and Russia, showing a tendency to vary in colour on the under side in accordance with the nature of the soil of the district in which the specimens had been taken.

Mr. M'Lachlan exhibited the eggs and young larvæ of *Ascalaphus longicornis*, found by Mons. E. L. Ragonot in the Forest of Lardy, not far from Paris, apparently the northern limit of distribution of the species. The eggs were arranged, after the manner peculiar in the family, in two rows on a dried grass stem, to the number of forty-six or twenty-three in each row. He had some of the young larvæ still living, but was uncertain as to whether he would be able to rear them.

Mr. M'Lachlan also exhibited, on behalf of Mr. Edwin Birchall, a much-worn example of *Heliothis scutosa*, which had been captured by Mr. W. H. Campbell, of Londonderry, in the north of Co. Donegal, Ireland, on the 19th August last. He alluded to the sporadic habits of this and allied species, and its rarity in the British Islands.

Mr. Rutherford exhibited, and communicated a description of, a new species of Goliath beetle, from Mount Camaroons, allied to *Ceratorrhina Sayi*, Westw. He also exhibited a specimen of a West African butterfly, *Romaleosoma Ruspina*, Hew., nearly a third of the wings of which, on both surfaces, along their outer margin, and beginning a little below the apical angle of the primaries, were entirely destitute of scales, with the exception of the nervures, which were sparsely covered with them. The symmetry of the transparent portion of the naked wings seemed, he thought, to preclude the idea that the butterfly had been partly denuded of its scales, either intentionally or by accident; and he inclined to the conclusion that the appearance it presented was due to some abnormal physiological condition occurring either in the larva or chrysalis.

Mr. G. C. Champion exhibited specimens of *Amara infima*, from Chobham, Surrey, this rare insect not having been recorded since 1857, when Dawson first added it to the list of British Coleoptera.

Mr. W. A. Forbes exhibited a collection of insects from Switzerland, taken at the latter end of June in a valley in the neighbourhood of Chamouni, at an elevation of 5000 or 6000 feet.

Mr. J. Wood-Mason read a note "On a Saltatorial *Mantis*," and exhibited a specimen of the insect, which had been captured on the banks of the Tagus. He also read notes "On the hatching period of *Muntida* in Eastern Bengal," and "On the presence of Stridulating Apparatus in certain *Mantidæ*," this being the first discovery of such an organ in that family. The author exhibited, in illustration of the last note, a large *Mantis*, showing the serrated fore margin of the tegmina by means of which the stridulation is effected.

Mr. Wood-Mason also stated that it might interest the members of the Society to hear that in the course of his anatomical work he had discovered a remarkable case of viviparity in the Orthoptera, in a large cockroach belonging to the genus *Panesthia*, the species of which inhabited the tropical forests of Southern Asia and of Australia, where they lived in the rotten wood of fallen trees. The species in question was *P. Javanica*, from the abdominal brood-pouch of the female of which he had extracted young white specimens of 6.5 mm. in length, and these, from their being already provided with legs, antennæ, black eyes, and the full number of already hard-tipped gnathites, as well as from their size, he judged were just on the point of birth when the mother was thrown into the alcohol. He further suggested that the curious and as yet unexplained habit evinced by several European species of *Blattidæ* of carrying their egg-capsules about with them for a week, or even for so long a period as a fortnight, before depositing them, might possibly be explicable as the retention of a vestige of a lost viviparousness.—R. MELDOLA, *Hon. Sec.*

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THE ROOKS AND ROOKERIES OF LONDON.

BY ALFRED NEWTON, M.A., F.R.S.

DR. HAMILTON's account of "The Rooks and Rookeries of London" (*suprà* pp. 193—199) has lately done me so much good service that I feel bound to tender my thanks to its author. At the same time I believe that he has in a few details been led astray, and, as the subject is (or ought to be) interesting to many readers of this Magazine, it seems to me as well that these errors (as they appear to be) should be noticed. There are none, however, which are more than trivial, and I may perhaps incur the charge of being hypercritical in pointing them out, though to the Londoners of future generations, when the Rook is exterminated, every particular concerning its former abode within their precincts will doubtless be cherished. Some years ago I appealed to the readers of the two weekly newspapers which often contain matter of value to the naturalist for information on the subject of London Rooks. To my great disappointment little or none was supplied. It has often been remarked that Londoners take no pride in their immense town, but I had hoped that some of the many ornithologists who constantly traverse its thoroughfares might, with satisfaction, have given a few particulars of the very considerable number (allowing for circumstances) of Rookeries existing within its limits—Rookeries which have for a long time excited the attention of no ordinary men—witness Oliver Goldsmith, Horace Walpole, and Charles Lamb.

Dr. Hamilton's paper therefore afforded me great satisfaction, as containing the results of the continuous observations of many

years, and I am sure that the great interest he takes in London Rooks will induce him to pardon me for these my remarks. To come to details, it might be inferred from his statement that the Rookery in the gardens of the old Green-Park Lodge ceased to exist soon after the death of the Princess Amelia. This inference would be erroneous. That lady died in 1810, but the house was for a long time after inhabited by Lady William Gordon, the widow of a Deputy-Ranger of the Park. I well remember it, and the high wall which, surrounding its garden, rendered the adjoining part of Piccadilly a most inconvenient strait. The house, I believe, had long been doomed, but in deference to its tenant its destruction was delayed. In 1841 Lady William died, and I think (though of this I am not quite sure) that it was immediately pulled down. Still the enclosed grounds and the nuisance of the high wall remained. There was the usual amount of "writing to 'The Times,'" and the usual number of questions in the House of Commons on the subject. At last public opinion was fully made up, and in the eventful session of 1844 a Bill, known as the 'Piccadilly Improvements Bill,' was passed through Parliament by the Government, the First Commissioner of Woods and Forests being then (if I am not mistaken) Lord Lincoln, afterwards Duke of Newcastle. This Bill, "to widen and improve Piccadilly," received the Royal Assent on the 9th August in that year, and thus became 'Act 7 and 8 Vict. cap. 88.' One of its principal objects was declared to be the making of "the said street called *Piccadilly* from *Bolton Street* to *Park Lane* of an uniform width of Seventy Feet or thereabouts." Its effect was the pulling down of the dead wall and the taking of a considerable slice off the garden of the former Ranger's Lodge, while the rest of the garden was thrown into the Park. The line of plane-trees which still exists along the south side of the foot-pavement was preserved, at the instance, I remember then to have heard, of the late Sir Robert Peel;* but a large number of the trees in the heretofore private grounds were felled, and among them some or all of those which formed the Rookery. Whither the Rooks which had inhabited these trees went, or whether they immediately took their departure I know not; but Dr. Hamilton's supposition that they then established the Rookery in Wharnccliffe Gardens can hardly be correct. I do not

* Mr. Wheatley, however, ascribes ('Round about Piccadilly,' p. 257) the suggestion of keeping the trees to the late Sir Charles Barry.

like to trust my own memory on this point, though I think I have reason to remember the nests in these gardens at a prior date, but Yarrell's evidence on the point is conclusive. In July, 1839, he spoke (*Brit. Birds*, ed. 1, vol. ii., p. 92) unmistakably of this Rookery being already long established.*

The witness cited by Dr. Hamilton is doubtless right in saying that he remembered no Rooks or Rooks' nests in the Temple Gardens for forty or fifty years. It is true that the '*History of Epsom*,' published in 1825 anonymously, but believed (as I learn through Mr. Harting's courtesy) to have been written by Mr. Pownall and the late Mr. Everest, speaks (p. 130) of it as then existing; but Rennie, only six years later ('*Architecture of Birds*,' p. 220), wrote of it as being "long abandoned"; and this is a point on which Rennie could hardly have been mistaken. The strange story of the establishment of this Rookery by Sir William Northey will, I hope, in the course of time be confirmed by further evidence. I can hardly accept it at present, and yet I should like to believe it.

With regard to the Rook's nest at the corner of Wood Street, Cheapside, I have to remark that had Dr. Hamilton referred to the later editions of Yarrell's '*British Birds*,' published in 1845 and 1856 (vol. ii., p. 92 and p. 96), he would have seen that the statement originally published in 1839 was modified according to experience, and moreover that Mr. Harting's authority for their being two nests in the tree in 1845 was Yarrell himself, who also first recorded the nest begun on the vane of St. Olave's, Crutched Friars, in 1838 ('*British Birds*,' ed. 1, vol. ii., p. 92).

It may be here worth while copying a passage from the somewhat scarce and now little read '*Ornithologia*' of James Jennings (ed. 2, p. 75):—

"There is a Rookery in the Tower, and another was, till lately, in Carlton Palace Gardens; but the trees having been cut down to make room for the improvements going on there, the Rooks have removed this spring (1827) to some trees behind the houses in New Street, Spring Gardens.

* His words are:—"In the gardens of two noblemen in Curzon Street, May Fair, a considerable number of Rooks have built for many years." Now anyone who knew London at that time must be aware that these two gardens were those of Chesterfield House, whose Rookery has only ceased within the last few years to exist (could not Dr. Hamilton give the exact date of its extinction?), and of Wharncliffe House, whose Rookery fortunately still remains.

There was also, for many years, a Rookery in the trees in the churchyard of St. Dunstan's in the East, a short distance from the Tower; the Rooks for some years past deserted that spot, owing, it is believed, to the fire that occurred a few years ago at the old Custom House. But the present spring, 1827, they have begun again to build on those trees, which are not elm, but a species of plane. There was also, formerly, a Rookery on some large elm trees in the College Garden behind the Ecclesiastical Court in Doctors' Commons, a curious anecdote concerning which has been recorded."

Here follows a reference to the story given by Hone, and already quoted by Dr. Hamilton.

I may perhaps be also excused for quoting a paragraph from the 'Field Naturalist' for 1833 (vol. i., pp. 88, 89), wherein is contained the following extract from a child's book: *—

"Some years since a small colony of Rooks, probably a detachment from that which had long occupied the trees in St. Dunstan's churchyard, took possession of some lofty elm trees on the parade in the Tower, which they soon filled with their nests; and the shortness of accommodation there, perhaps, led some of them to occupy the crowns, which are fixed on the top of the vanes at each turret of the White Tower. The remains of the nests may still be seen filling these singular stations."

Finally, while on the subject of Rooks, I may be allowed to say that since the publication of my history of the species in the revised edition of Yarrell's 'British Birds,' I have been favoured by Lady Stuart-Menteth with a copy of the pamphlet 'Farmers *versus* Rooks,' mentioned by Yarrell, which, notwithstanding search made in many quarters, I had been unable to see. It is in the form of a report of a trial "supposed to have taken place in Ayrshire, before a committee of gentlemen, appointed by the Agricultural Society of that county, to consider the supposed damage done by Rooks to their tenantry," and was printed at Ayr in 1838. There is now no novelty in the statements adduced on either side, whatever there may have been then; but the author, Mr. (subsequently Sir James) Stuart Menteth, skilfully marshalled a long array of witnesses on behalf of his clients, though the jury returned a verdict of guilty.

* 'Sketches of Birds,' &c. By S. Roper. 12mo. Harvey & Darton, London. 1832.

NOTES FROM AN ARCTIC JOURNAL.

BY H. W. FEILDEN, F.G.S., C.M.Z.S.

(Continued from p. 418.)

Cape Victoria is a fine headland of Silurian limestone, some 1000 feet high, resting on a base of conglomerate. I was fortunate enough during the few minutes we were on shore to extract a few fossils, one of them being an example of *Maclurea magna*,* which has proved extremely useful in fixing the geological age of these rocks. The flora on this hard limestone is much scantier than on the granitoid rocks, which disintegrate freely and form patches or pockets of soil. I only noticed a single species of *Salix* and *Saxifraga oppositifolia* growing. There again on the beach just above the ice-foot we found the lichen-covered remains of native encampments, with several fox-traps, and fragments of animals' bones. At mid-day there was a fall of snow, which, freezing as it reached the water, converted the pools and lanes between the floes into a tenacious sludge, through which it was almost impossible to move a ship. At this juncture our vessel narrowly escaped being pushed on shore by the ice; but at flood-tide the pack eased somewhat, and enabled a course to be made to Franklin Pierce Bay, which we reached on the 9th August, where we obtained a certain amount of protection from the ice, in the vicinity of Norman Lockyer Island.

Landing at Cape Harrison, the western extremity of the bay, we found a series of old sea-margins rising in terraces to a height of about 300 feet, or to the base of the cliffs, which are composed of a grey limestone similar to that of Cape Victoria. These terraces are a very marked natural feature of most of the bays and inlets of Smith Sound, and show that oscillations in level are constantly progressing in that part of the globe. At some points summer torrent-courses had cut away the terraces, or else at these particular spots the banking up had not taken place. I was very much surprised to find that at these places where the basement rock was exposed it exhibited well marked ice-scratchings, and as there was no appearance of any glacier having existed at the spot I was at a loss to account for the phenomenon, until subsequently we became better acquainted with the power of grounded floe-ice

* Etheridge, 'Quarterly Journal Geol. Soc.,' 1878, p. 605.

to make the scratches there observed on the rock. On one of the terraces, at an elevation of a hundred feet, was a well-marked native encampment, with lichen-covered friable bones strewed about. As a rule the Eskimo do not pitch their tents far from the sea-level, and it is therefore not improbable that the land may have risen to the present altitude of the encampment since the date of pitching the tent. The invariable method of the Eskimo is to keep down the sides of their skin-tents by placing stones on the edges. When camp is moved the tent is dragged from underneath them, and the circle of stones remains in these regions a very enduring monument of human labour.

There were a considerable number of Walrus in the bay, generally to be seen in the pools of water over a shoal, or else resting on the floe-ice in the same neighbourhood. On one occasion I crept to within twenty yards of a group of three that were resting on the ice. They were lazy, indolent brutes, basking in the sun, and took little heed of my approach. Every now and again one or other would open its sleepy eyes and rub its neighbour's coat; whether that movement was intended as a signal of alarm, or as a good-natured attempt to rid its friend of the parasite, *Hematopinus trichechi*, which infests the skins of these animals, most especially between the toes of the flippers, I cannot say, but they allowed a boat to get near enough to them to discharge a harpoon gun. The largest of the three was struck, and immediately dived, but came to the surface as soon as it felt a purchase on the line; it then endeavoured to attack the boat, but was soon killed with rifle-bullets. The next day a very large old male was captured by the same means. The length of this animal along the curve of the back from the tip of the nose to the end of the hind flippers was twelve feet six inches; girth before fore-arm eleven feet six inches, immediately behind the fore-arm eleven feet; its tusks measured eighteen and a half inches to the point of insertion in the bone, and we estimated its entire weight at a ton. We ate the liver which was quite palatable, but the flesh, though well tasted, was tough and black. Its stomach contained a large amount of green fluid oil, in which small particles of *Ulva latissima* could be detected, and minute fragments of the shells of *Mya*.

A visit to Norman Lockyer Island showed that a large colony of Eskimo must have once inhabited it, for hundreds of walrus-skulls lay around the deserted "igloos," now moss-covered, and

only recognisable by the brighter green that marked the sites. A single rib lying near the beach showed that at some time whales must have penetrated Smith Sound to this point. At the period of our visit very little snow was lying on Norman Lockyer Island; its summit, some 400 feet high, showed a great amount of glacial scratchings. The highest point is its southern face, and from there the land slopes gradually to the sea, the dip of the rock being from south to north. The lines of old sea-margin are very conspicuously marked on the island by a series of terraces extending across its face. These terraces are formed of angular, weathered fragments of limestone, containing a few fossils, which also appear in the parent rock. I brought away from there *Favosites gothlandicus* and *F. alveolaris*, well-known Upper Silurian forms. The fact of the terraces on Norman Lockyer Island being formed of angular fragments at once attracted our attention, for it showed that they were not sea-beaches in the ordinary sense of the term, wherein the component pebbles are found more or less rounded. My attention was naturally directed to the ice-foot, which clings to the shore, for a solution of the problem, and I am convinced that these terraces are formed by the ice-foot banking up the material as it falls from the cliffs above. A long series of subsequent observations confirmed me in the following views:—

“The typical aspect of the ice-foot in Smith Sound is that of a terrace of fifty to a hundred yards in width, stretching from the base of the talus to the water's edge, its width varying with the slope of the sea-bottom, decreasing in direct proportion to the increase of the land slope.

“The first action of the solar rays is exerted on the snow forming the uppermost layer of the ice-foot which lies nearest to and upon the talus, the dark surfaces of which rapidly absorb the heat of the sun. A deep trench is formed in the snow at the junction, which becomes filled with water, partly derived from the melted snow of the ice-foot and partly from that pouring down from the uplands; these united streams in a few hours eat deep channels across the ice-foot and discharge themselves into the sea through transverse gullies. At low water the ditches and gullies are drained, whilst at high water the sea pours in through these apertures with considerable violence, and sweeping right and left, traverses the ditch, eats away the base of the talus, and re-assorts the material.”*

Our enforced delay gave us several opportunities for dredging, but only in shallow water, not more than twenty fathoms. The fishes

* Quarterly Journal Geol. Soc., 1878, p. 565.

captured were *Icelus hamatus* (Kröyer), *Cyclopterus spinosus* (Müll.), *Liparis Fabricii* (Kröyer), *Triglops pingellii* (Reinh.), *Gymnelis viridis* (Fabr.), and *Gadus Fabricii* (Rich). The Echinodermata were more abundant, and a crinoid, *Antedon Eschrichtii* (Müller), was a conspicuously beautiful object, clinging to the meshes of the trawl by its dorsal cirri.

On the 12th August a favourable breeze opened a water-way along the shore, and our ships managed to round Cape Hawks, and to find shelter amongst the floes in Dobbin Bay. Our progress northwards from this point until rounding Cape Frazer, the meeting-place of the Polar and Baffin Bay tides, was distressingly tedious and harassing. As a rule the atmosphere was clear, and we were still enjoying the midnight sun, but the sameness of the scenery became monotonous. The coast-line is a series of headlands rising to a height of a thousand or twelve hundred feet, with abrupt mural precipices, a steep talus stretching, as a rule, about half way up the cliffs from the shore. The indentations between the headlands are valleys debouching abruptly on the sea. In nearly every valley the old lines of sea-margins were distinctly marked by series of terraces, showing the continuous elevation of the land. To seaward the sound was packed with floe-ice moving north and south with the tides and winds, but with a general set to the southward. At the changes of the tides small pools of water would open, but hardly ever a continuous water-way of a quarter of a mile. Our leader was always on the watch to take advantage of the slightest change in the ice; but on many occasions part of our hard-earned progress had to be relinquished, and a timely retreat from between two closing floes saved the ship from destruction. The bumping of the ship charging against the ice, the creaking of her timbers when squeezed or nipped, the incessant quickly-given words of command, and the ever-present chance of shipwreck, with the difficulty of getting sleep, were very trying to the nerves, and it was with a feeling of thankfulness and relief that, owing to the ships at times being closely hemmed in by the ice, we were able to have a run on shore.

Washington Irving Island, at the entrance of Dobbin Bay, was visited, and afforded a collection of Silurian fossils, but all corals. In one strata the rock appeared to be entirely composed of *Favosites gothlandicus* and *F. alveolaris*, the former species greatly preponderating.

To make clear to my readers the extraordinary difference of temperature between the sea of Palæozoic times and that now encircling the North Pole, I cannot do better than quote a few lines from Mr. Etheridge's exhaustive report on the Palæontological collections of the Expedition:—

“These undoubted reef-forming corals of the Silurian epoch were just as much inhabitants of warm water in southern latitudes at that period as are the Sclerodermata of to-day in the Indo-Pacific and Atlantic Oceans; and as we know of no compound coral that will exist at a lower temperature than 68° F., and as the surface-waters under the equator in the Pacific have a temperature of 85° F., and in the Atlantic 83°, it seems clear that the range from 68° to 85° F. is best adapted to and not too high for the growth of the reef-making species. We may fairly assume that the temperature of the Polar waters during Palæozoic times was as high as that of the Indo-Pacific and Atlantic now, where coral-reefs abound. We are not justified in supposing that the laws regulating oceanic life were very different then from those now existing (in the same groups) under the equator or between the tropics. These corals were forms of life which must have been tropical in habits and requirements.”*

At Cape Hilgard we had twenty-four hours on shore, and as the Silurian rocks of that locality are especially rich in fossils I made a very interesting collection. Birds were not numerous; during the day I observed only one Glaucous Gull and three Turnstones; one of these was shot, and found to have its stomach filled with the seeds of *Draba alpina*. Others of our party killed six Ptarmigan, *Lagopus rupestris*.

On the 16th August the ships were firmly beset close to Cape Hayes. Landing with Captain Nares and Markham, we came across the fresh footprints of a bear on the ice-foot. Vegetation was very scanty; the yellow poppy, arctic willow, with two or three species of saxifrage were all the plants we observed. A butterfly, *Argynnis*, was captured. It is difficult to imagine how Lepidoptera can exist in a climate which during the months of June, July and August has a mean temperature of less than three degrees above freezing and an annual mean of four degrees below zero, with falls of snow during the warmest months of the year. About a mile south of Cape Hayes a pair of Ivory Gulls were nesting in the precipitous limestone cliff. We were attracted to the spot by their shrill cries, and the movements of one of the pair

* Quarterly Journal Geol. Soc., 1878, p. 578.

who came swooping down at us, passing within twenty or thirty feet of our heads. The other bird sat on the nest, which was placed on an inaccessible ledge. Dovekies were tolerably abundant, and were nesting in the cliffs, flying down to the pools between the floes for food, which they took to their young. I noticed that they seldom missed capturing a fish, *Gadus Fabricii*, at the first dive; this they held in their bills by the head as they flew back to the cliffs, but they did not carry more than one fish at a time.

On the 19th August the ships got to the northward of Cape Frazer, and on the evening of the same day Markham and I landed on Cape John Barrow; he ascended the heights to obtain a view of the offing, whilst I devoted the time to geological enquiry. The strata I examined at Cape John Barrow were nearly horizontal, with a slight dip to the N.N.W., true. The limestone split into slates, which were highly fossiliferous; but the fossils were very badly preserved, though specimens of *Orthoceras*, *Strophomena*, and *Rhynchonella* might be detected. Mr. Etheridge,* in referring to these specimens has fallen into a slight error—probably my own in want of care in labelling—by supposing these specimens obtained at Cape John Barrow and Hayes Point were drifted rocks. This was not the case; they were obtained *in situ*, and their stratigraphical position ascertained.

To the northward of Cape Barrow the ice was not so closely packed as we had hitherto experienced in Smith Sound, and on the 22nd August we entered into a long expanse of open water, which enabled us to reach without difficulty as far north as latitude 81°. There, in the broad extension of the channel called Hall Basin, we were again stopped by the ice, and took shelter at the mouth of Bessels Bay, waiting for a lead. The sixty miles of comparatively open water which we passed through between Cape Collinson and Hall Basin was almost devoid of animal life. About a dozen Black Guillemots were seen, and a single Seal, but no Gull, Walrus, or Narwhal.

Bessels Bay is a fiord cut by ice-action out of the limestone; its perpendicular sides rise to a height of over a thousand feet at the entrance. Further inland numerous glaciers pour down its sides, the overflow of the *mer-de-glace* of Washington Land, which uniting in the fiord form one discharging glacier. Owing to the

* Quarterly Journ. Geol. Soc., 1878, p. 603.

small depth of water, the icebergs shed from it are comparatively small. We put the dredge over in front of the glacier, in a depth of seven fathoms and a half, with a bottom temperature of 28° F. The bottom consisted of rounded limestone pebbles dropped by the bergs. Very little living material was brought up; two examples of *Trochus umbilicalis*, and an *Astarte*, two annelids, and a star-fish being the result of the haul. Dovekies were nesting in the cliffs, and several Eider Ducks, one with a brood of downy young ones, were seen. I landed with Lieutenant Parr on the north side of Bessels Bay; the cliffs rise perpendicularly from the shore, but in some spots a talus stretches to a height of 300 feet; we scrambled up this, and looked out over Hall Basin. To the northward and towards Polaris Bay, the ice was tightly packed; but a lead showed to the westward in the direction of Lady Franklin Sound. A southerly wind blew strong and very cold, though the thermometer marked 27° F. We returned to the ship with a small collection of plants and fossils.

(To be continued.)

OCCASIONAL NOTES.

WEASEL STEALING EGGS.—A friend of mine, Mr. William Trousdale, on whose veracity I can implicitly rely, lately supplied me with the following anecdote:—During the time he occupied a farm at Ryton, in the North Riding, in the spring of a certain year, he had a hen sitting, and noticed that one of her eggs disappeared daily. He was quite unable to account for this, until one day he saw a Weasel come out of a cart-shed, where the hen was sitting, with an egg in front of him. He immediately gave chase, when the animal made for a hedge-bank some forty yards distant from the shed. My friend overtook it just as it was trying to get the egg into a hole, into which, on his near approach, the animal disappeared. My informant, who on taking up the egg saw the Weasel look out from its hiding-place, states that the egg was rolled along the ground in front of the animal, and he was surprised at the rapidity with which it moved.—WALTER STAMPER (Highfield, Oswaldkirk, York).

STARLINGS DESTROYING LARKS' EGGS.—In reply to the Editorial query (p. 427), I may state that I have no direct evidence to offer against the Starlings, so far as Larks' eggs are concerned; and in saying that the

disappearance of Sky Larks was "without doubt" caused by Starlings destroying their eggs, I was more guided by the opinion of others having better opportunities for observation than myself, than by my own convictions. From whatever cause it may be, it is certain that Sky Larks have almost entirely disappeared, not only in the parish of Troqueer (wrongly spelt last month), but everywhere within a circuit of about six miles from Dumfries—that is, in both the counties of Dumfriesshire and Kirkcudbrightshire, Dumfries being situated on the River Nith, which divides the two counties. In numerous other places is the same complaint heard. The causes that have thinned the flocks of other of our native birds do not operate in the case of the Lark. Birdcatchers do not take them in our locality to any appreciable extent, gamekeepers and farmers have no antipathy to them, reclamation of the wilder parts of the district does not seem to drive them off; and they are not specially the victims of any of the birds of prey, for Merlins are very rare with us; so that it is difficult to assign any reason for their great decrease, if the Starlings are not the authors of the mischief. The search for food leads the Starlings into the places frequented by Larks, and when there, from what I have seen of their evil propensities, I believe they will not hesitate to destroy every nest they fall in with. In several instances I have seen them breaking the eggs and tearing up the nests of House Sparrows which had built in ivy-covered trees, sheer malice apparently being the only incentive. I have also seen—and indeed this is a common complaint in the district—Starlings enter the pigeon-boxes and destroy the eggs of the Pigeons, and I have also seen them pull out the newly-hatched young birds and drop them to the ground, all the while chattering with glee, and seemingly taking a deal of pleasure in perpetrating these atrocities. It is very remarkable, and I am afraid more than a mere coincidence, that as the Starlings have increased and multiplied so the Larks have disappeared, and it is, I think, reasonable enough to connect the Starlings in some way with the absence of Larks. I observe Mr. R. Gray is of the same opinion, for in the 'Proceedings of the Natural History Society of Glasgow' (vol. i., part i., p. 13), he mentions that "Starlings have become destructive to the Sky Lark and other birds building on the ground, the nests of which are rifled of their contents, even when the eggs are newly hatched, as has been repeatedly observed by trustworthy observers."—ROBERT SERVICE (Maxwelltown, N.B.).

[Were the scarcity or absence of Larks observable only at this particular season, it might be accounted for by the fact that Larks not only flock, but migrate southward at the approach of cold weather. Certain districts in North Britain might thus be entirely deserted by these birds in winter.—ED.]

SNOW GEESSE IN IRELAND.—Referring to the Editor's remarks (pp. 419—422) on the further appearance in Ireland of the Snow Goose, and to Mr. Howard Saunders' previous record of what has hitherto been considered the only occurrence of Snow Geese in the British Isles, I should like to bring under notice a previous appearance which has lately been made known to me, but which I believe has never before been recorded. The following are the facts of the case:—The birds alluded to were in the aviary of the thirteenth Earl of Derby at Knowsley, and at his death were sold by public auction by Mr. J. C. Stevens, in August, 1851, the purchaser being Mr. P. Castang, of Leadenhall Market. They are described in the Catalogue as follows:—"Lot 584. Two Snow Geese (*Anser hyperboreus*, Pallas; *Anser niveus*, Brisson; *Anas cærulescens*, Linnæus; *Anas nivalis*, Forster), N. America." Mr. Castang has kindly written me the following memorandum concerning them:—"I beg to say I purchased a pair of Snow Geese at the late Earl of Derby's sale at £5 the pair, and my old friend Mr. John Thompson afterwards joked me at giving so much, as he had purchased three of them at half-a-crown each while travelling in Ireland, out of a flock of common geese running on a green. I sold them to my valued customer, Mr. W. Domville, of Santry House, Dublin." The Mr. John Thompson to whom he refers was the superintendent of Lord Derby's Menagerie; but, as he is not now living, I am unable to gather any further particulars as to locality, date, or what became of the third bird mentioned. As Cassin did not describe the species named after him until 1856 (Proc. Acad. Nat. Scien. Phil., 1856, p. 41), it is a matter of doubt to which of the three species the birds in question belonged. If Mr. Domville has still the birds in his possession, he would no doubt be able to settle the point—one of great interest to ornithologists.—E. BIDWELL (Richmond, S.W.)

[As twenty-seven years have elapsed since the sale of the Knowsley Menagerie, it is very unlikely that the birds in question are still living. Nevertheless, the skin of one or both may have been preserved; and if so, Mr. Domville would confer a favour on ornithologists by forwarding a description of the plumage, with measurements of bill, wing, and tarsus, together with any particulars concerning their capture which he may have committed to memory or to writing.—ED.]

SNOW GEESSE IN IRELAND.—Since writing the remarks which appeared in the last number of 'The Zoologist' (pp. 419—422), I have received from Mr. Crampton, the owner of the bird still living at Belmullet, a note, in which he has furnished, at my suggestion, the measurements of the bill, wing, and tarsus. These measurements may be said to prove, I think conclusively, that the bird, as already surmised, is *Anser albatus*, Cassin. He says, "Bill, $2\frac{1}{8}$ inches; wing, about 15 inches; tarsus, 3 inches." Thus it varies only to the extent of one-eighth of an inch in both bill and tarsus from the specimen in Mr. Saunders' collection, which was

procured in Wexford. It still remains an open question whether *albatus* is a good species, or, as Dr. Elliott Coues considers it (Key, N. Amer. Birds, p. 282), a variety distinguishable only by its size from the larger *Anser hyperboreus*.—J. E. HARTING.

TREE PIPIT IN IRELAND.—Referring to the Rev. C. W. Benson's note on the occurrence of the Tree Pipit in the County Dublin (p. 348), I may remark that about thirteen years ago, while birdsnesting near Raheny, on the north side of the same county, I found at the base of a furze-bush a nest with eggs which were quite new to me, although I was perfectly familiar with the birds and nests of that county. The bird in question on being disturbed perched in a hawthorn about forty yards off, near enough for me to see a pale yellowish breast which I did not recognise, and to hear a loud note which I had never heard before. The eggs were much redder than any I had seen, and on taking them home and comparing them with the figure of the Tree Pipit's egg in Laishley's 'British Birds' Eggs,' I made sure that they belonged to that species. A description of the bird afterwards left me no doubt on the subject. I preserved the eggs as amongst my rarest for a long time, and I believe I have one still in a cabinet in Dublin.—H. CHICHESTER HART (Glenalla, Ray, Letterkenny).

SPOTTED CRAKE IN SUFFOLK.—During the second week in October, a Spotted Crake was killed at Leiston on a large piece of reed-land. A nest of this species was found at the same place in May, 1872, with the old bird just hatching. Since then (Sept. 18, 1873) an adult bird was shot there, but was too much mutilated to be worth preserving. On visiting Easton Broad the other day (Oct. 18) we found the surface dotted all over with wildfowl, by far the greater part consisting of Coots. There were besides several flocks of ducks (*A. boschas*), and a good many either Scaups or Pochards; but the day being very thick, we could not with certainty determine to which species they belonged. I have met with the Dartford Warbler several times lately among high furze-bushes on the heath between here and Iken.—G. T. ROPE (Blaxhall, Suffolk).

A HEN SWIMMING.—*Apropos* of the instance noticed by Mr. Kerry (p. 437), it may be remarked that the circumstance, although curious enough, is not unprecedented. The late Bishop Stanley, in his 'Familiar History of Birds,' mentions (p. 285) a hen in the possession of a clergyman which so far overcame her natural fear of water as to be in the constant habit of making a short cut from the churchyard (into which she with the rest of the poultry occasionally wandered) to the barn-yard, by regularly swimming across a pool, which was situated between it and the churchyard. The distance was almost thirty yards, and the part of the pool where she crossed was so near the end of it that the other fowls which came round arrived before her.—J. E. HARTING.

SPOTTED FLYCATCHER NESTING IN HYDE PARK.—A pair of Spotted Flycatchers, *Muscicapa grisola*, frequented the gardens of Hamilton Place this summer (1878), and from the male bird being constantly alone there can be no doubt they had a nest there. Another pair built a nest in the foot of an elm in the Ornamental Garden at the east end of the Serpentine, and hatched their young. I watched the parent birds constantly feeding them. Another pair built their nest in a tree a few yards from the broad walk leading to the Albert Memorial, Kensington Gardens.—EDWARD HAMILTON (Portugal Street, Grosvenor Square).

SABINE'S GULL AT SCARBOROUGH.—On November 7th I had an immature specimen of Sabine's Gull brought in to be preserved. No mature specimen, so far as I am aware, has been obtained on this coast.—ALFRED ROBERTS (Scarborough).

DEATH OF MR. T. W. WONFOR.—This gentleman, whose name has long been familiar to all classes of Brighton society, died at his residence, 38, Buckingham Place, Brighton, on Sunday, the 20th October last, in the fifty-first year of his age. His entry on a public career in Brighton was first made in connection with the Royal Literary and Scientific Institution, at the Albion Rooms. Shortly after the formation of the Brighton and Sussex Natural History Society, in 1855, Mr. Wonfor was appointed an Honorary Secretary, a post he continued to fill to the date of his death, and the duties of which he discharged with exceptional ability and energy. At the meetings of this Society, from which he was rarely absent, his extensive knowledge and cheerful manner rendered him a universal favourite, and his death leaves a vacancy which it will be difficult to supply. The papers communicated by Mr. Wonfor to the 'Proceedings of the Brighton and Sussex Natural History Society,' chiefly on subjects connected with Microscopy, are numerous, and the excellence of many of them obtained for their author a more than local reputation. One of these, "On certain Butterfly Scales characteristic of Sex," read at Brighton in November, 1867, was subsequently published in the eighth volume of the 'Microscopical Journal.' In addition Mr. Wonfor contributed a great many articles on different branches of Zoology, not only to the 'Proceedings' of his own Society, but to 'Scientific Opinion,' 'Science Gossip,' and other periodicals. On the occasion of the visit of the British Association to Brighton, in 1872, Mr. Wonfor took a very active part in their proceedings, and acted as Secretary to one of the Committees. Although he never attained the position of a distinguished scientific specialist, few men ever possessed so large an amount of general information on scientific matters, or have been more ready to impart it for the benefit of others. Mr. Wonfor was appointed Curator of the Free Library and Museum in 1875, and was elected a Fellow of the Linnean Society in June, 1877, and a Member of the Entomological Society in February last.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 7, 1878.—Professor G. J. ALLMAN, F.R.S., President, in the chair.

At this the first meeting of the session, the following gentlemen were elected Fellows of the Society:—The Rev. W. W. Fowler, Repton, Burton-on-Trent; Wilfred Huddleston, Esq., 23, Cheyne Walk, S.W.; and Thomas Moss Shuttleworth, Esq., Howick, Preston, Lancashire.

Dr. F. Buchanan White read “Descriptions of new Hemiptera.” The specimens on which his communication was founded were chiefly obtained by Prof. J. W. H. Trail during his explorations on the Amazon. Dr. White defined two new genera (*Helenus* and *Neovelina*), and gave the diagnosis, with remarks, of seventeen new species: these are *Paryphes pontifex*, *Fibrenus guttatus*, *Largus lentus*, *Ischorovemus inambitosus*, *Pamera pagana*, *Lethacus lepidus*, *Helenus hesiformis*, *Acanthocheila abducta*, *Hydrometra metator*, *Velia vivida*, *V. virgata*, *Neovelina Trailii*, *Microvelia minuta*, *Hydrobates regulus*, *Limnogonus lotus*, *L. lubricus*, and *Pelocoris procurrens*.

Sir J. D. Hooker presented to the Society, in the name of a committee of gentlemen, a large oil painting of the Rev. M. A. Berkeley, the distinguished fungologist, painted by Mr. I. T. Peale.

Although the papers read at this meeting were chiefly on botanical subjects, some of these are of sufficient interest to zoologists to be mentioned here;—

Dr. Maxwell Masters read an extract from a letter of Dr. Beccari, describing a gigantic Aroid found by him in Sumatra. Its tuber is five feet round, and the blade of the petiole is said to cover an area of fifteen metres, or forty-five feet.

In a paper on the Euphorbias, Mr. George Bentham made some pertinent remarks on the subject of nomenclature. Regretting the increasing confusion in synonymy, he observed, “Besides the young liberal-minded botanists who scorn to submit to any rules but their own, there are others who differ materially in their interpretation of some of the laws, or who do not perceive that in following too strictly their letter instead of their spirit they are only adding needlessly to the general disorder. In the application as well as in the interpretation of these rules, they do not sufficiently bear in mind the general principles—first, that the object of the Linnean nomenclature is the ready identification of species, genera, or other groups

for study or reference, not the glorification of botanists; and, secondly, that changing an established name is very different from giving a name to a new plant. * * * The rule that long-established custom amounts to prescription, and may justify the maintenance of names which form exceptions to those laws which should be strictly adhered to in naming new plants, is unfortunately now frequently ignored, and the changes proposed in universally admitted names are producing in many instances the greatest confusion."

Another paper of a physiological cast was that of the Rev. G. Henslow, "On the Absorption of Rain and Dew by the green parts of Plants." It appears that earlier experimenters were fully persuaded that leaves could and did absorb dew and rain. Duchartre, in 1857, reversed this view. Mr. Henslow now maintains, from his own experiments, that absorption does take place soon after the sun has risen, and under other predisposing circumstances; thus the common notion of gardeners is right, and the late current teaching of science wrong.

"Notes on Cleistogamous Flowers, chiefly of *Viola*, *Oxalis*, and *Impatiens*," was the title of a paper read by Mr. Alfred W. Bennett.

Dr. Thomas Boycott exhibited a great blanket-like sheet of *Chara* (*Nitella*, sp. ?), got from a dried pond in St. Leonard's Forest, Sussex. To zoologists and microscopists the rare material entangled in this vegetable mat would be of the highest interest.

Specimens of growing India-rubber trees from West Africa were shown by Mr. Thomas Christy; and Dr. R. C. A. Prior brought forward a branch in blossom of *Colletia cruciatica*, grown out of doors in Somersetshire by the Rev. W. Sotheby.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

November 5, 1878.—A. GROTE, Esq., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, September and October, 1878, and called attention to some of the more remarkable accessions which had been received during that period.

A communication received from Mr. J. H. Gurney contained a memorandum from the late Mr. E. C. Buxton, stating that *Asturinula monogrammica*, observed on the Eastern Coast of Africa, had a song which was heard morning and evening.

An extract was read from a letter addressed to the Secretary by Dr. A. B. Meyer respecting a supposed new Bird of Paradise, obtained on the West Coast of New Guinea.

An extract was read from a letter addressed to the Marquis of Tweeddale by Mr. A. H. Everett, stating that the Anoa of Celebes, *Anoa depressicornis*, or an allied species, was found in the Island of Mindoro, Philippines.

Professor Newton exhibited and made remarks on a supposed hybrid between the Red Grouse and Ptarmigan, lately shot in Sutherland by Captain Houston.

A communication was read from Mr. R. Bowdler Sharpe, containing a description of a new species of *Indicator*, with remarks on other species of the genus. A second paper by Mr. Sharpe contained a note on *Paoptera lugubris*.

A communication was read from Mr. G. B. Sowerby, Jun., wherein he gave the descriptions of ten new species of shells from various localities.

Mr. A. G. Butler read a paper in which he gave the description of a remarkable new spider, obtained in Madagascar by the Rev. W. D. Cowan, for which the name of *Carostris avernalis* was proposed.

A communication was read from Lieut.-Colonel R. H. Beddome, containing the descriptions of six supposed new species of snakes of the genus *Silybura*, family *Uropeltidae*, from the Peninsula of India.

A communication was read from Mr. Edgar A. Smith, containing the description of a collection of marine shells, made by Capt. L. W. Wilmer, in the Andaman Islands.

Mr. F. Moore communicated a list of the lepidopterous insects collected by Mr. Ossian Limborg in Upper Tenasserim, with descriptions of new species.

Mr. George French Angas gave the descriptions of six species of bivalve shells in the collection of Mr. Sylvanus Hanley, and a *Helix* from the Solomon Islands. Mr. Angas also read descriptions of ten species of marine shells from the Province of South Australia; and, in continuation of former papers on the same subject, read a list of additional species of Marine Mollusca to be included in the Fauna of the Province of South Australia, with notes on their habitats and local distribution.

Dr. G. E. Dobson read a note on *Myxopoda aurita*, a new form of Chiroptera from Madagascar, remarkable for possessing suckorial disks, as in *Thyroptera*. Dr. Dobson also gave descriptions of some new or rare species of bats, based on specimens in the Museum of Natural History of Paris. To the new species the following names were given:—*Pteropus Germaini*, from New Caledonia; *Cephalotes minor*, from New Guinea; *Emballonura raffrayana*, from Gibolo; and *Schizostoma brachyota*, from Cayenne.—P. L. SCLATER, *Secretary*.

NOTICES OF NEW BOOKS.

Natural History, Sport and Travel. By EDWARD LOCKWOOD, Bengal Civil Service, late Magistrate of Monghyr. Post 8vo, pp. 284. London: Allen & Co. 1878.

THE title of this book, although conveying an accurate idea of the nature of its contents, does not sufficiently indicate its scope. After the word "Travel," the author should have added "in Bengal," or, to be still more precise, "in Monghyr," a district of Bengal embracing some 4000 square miles, and divided into two nearly equal portions by the Ganges. In this district Mr. Lockwood was for many years resident magistrate, and having a taste for Natural History he devoted much of his leisure time to the fauna and flora around him. The country explored by him is in some respects a remarkable one; the northern part consisting of a vast plain of rich alluvial soil, the southern portion being covered with extensive rice-beds and forests. As might be supposed, the wild animals which haunt the one are very different to those which frequent the other; and the same may be said of the vegetation with which the country north and south of the Ganges is clothed. In the country to the south are found Bears, Tigers, Baboons, squirrel-like Tupaias, or Tree Shrews, Peacocks, Jungle-fowl, and Grey Partridges. These do not occur in the northern part of this district, which according to Mr. Lockwood must be a very paradise for the wildfowl shooter. On one lake near Sakar-poor he computes that he saw no less than—Wild Geese, 5,000; Red-crested Pochard, 20,000; Pin-tailed Duck, 20,000; Pochard, 50,000; Teal, 20,000; Garganey, 20,000; Gadwall, 10,000; Shoveller and Ferruginous Duck, 10,000; Glossy Ibis, 10,000; Red-crowned Ibis, 1,000; Black-headed Ibis, 100; Curlew, 100; Purple Heron, 100; Common Heron, 200; Egrets, 10,000; Purple Coot, 2,000; Jacana, 5,000; Bald-headed Coot, 50,000; Godwit, 50,000; Stilt Plover, 5,000; Cormorant, 10,000; Indian Snake-bird (*Plotus*), 5,000; Crested Grebe, 100; Dabchick, 200; Osprey, 20; White-tailed Eagle, 20; Kite, 100; other birds of prey, 20.

The time most interesting to the naturalist on this lake is said to be at sunset, when the birds come in from all the country round to roost on the marsh myrtles. The air is then alive with birds. The different species are noticed in turn by the author, who gives

at the same time an account of the various attractive water-plants to be met with at this interesting spot.

Describing the food supplies of Monghyr, he especially notices the Mahwa-tree, *Bassia latifolia*, one of the most useful trees in the world. "It is a fountain producing food, wine, and oil. Food to thousands of poor people, who find the succulent flowers, both fresh and dried, wholesome food; wine, or rather spirit, distilled from the flowers, to the whole of the district; and oil pressed from the fruit, used for the adulteration of *ghi* in this district and in Calcutta." Of the vast amount of Mahwa collected, by far the greater part is eaten, and during the famine of 1873-74, it kept alive thousands who otherwise must have starved.

Among the plants cultivated for oil in Monghyr is Mustard, from which many thousand tons of oil are yearly manufactured for home consumption or exportation. Flax, or "Linseed," as it is called in India, ranks next in importance, and may be seen in almost every village; Castor-oil comes next, and then Sessamum, Poppy, Safflower (*Carthamus tinctorius*), and Starflower (*Verbesina sativa*). It is observable that, though common enough in the south, no poppies are to be seen north of the Ganges. Indigo usurps nearly 16,000 acres, and tobacco is cultivated to a very considerable extent.

Although the soil of Monghyr is said to have deteriorated since it was first cultivated, the number and variety of the crops which are successively raised is remarkable. In addition to the vast rice tracts with which, in the south, a great portion of the district is covered, and besides the vegetable products above named, may be seen cucumbers, egg-plants, potatoe, Indian corn, capsicums, cauliflowers, peas, wheat, and the edible grass, *Sorghum saccharatum*, the last-named growing to such a height as to completely hide a horseman when passing through it.

From the timber trees, of which an account is given (p. 249 *et seq.*), to the birds, reptiles, and insects which frequent them the transition is natural, and Mr. Lockwood has many interesting observations concerning them—so many, indeed, that it is difficult to make choice of any particular passage for quotation. His aim, as he informs us in his Preface, has been "to tell his story briefly, and in the lightest possible style." He has succeeded in writing a very entertaining volume, and one which contains more information on the Natural History of India than is to be found in many Anglo-Indian books of greater pretensions. It is to be

hoped that his taste for observing and his zeal in faithfully recording his observations may be emulated by others who—favourably situated like himself—have it in their power to add materially to our knowledge of the zoological and botanical wealth of our Indian Empire.

We regret that we cannot congratulate Mr. Lockwood on his illustrations, most of which are crude and unfinished, and we miss an Index, which would have added much to the utility of his book.

The History of Glanville's Wootton, in the County of Dorset; including its Zoology and Botany. By C. W. DALE. 8vo, pp. 392, with two photographs. London: Hatchards. 1870.

THE history of Glanville's Wootton, as related by Mr. Dale, occupies barely six and twenty pages. From this circumstance one is led to infer that the account must either be very imperfect or it was hardly worth publication. Nor do the 366 pages which follow on the Zoology and Botany of the parish compensate for the earlier shortcomings of the author. Nearly three hundred pages are occupied with a systematic list of insects, of which only the scientific names are given, and these not always correctly, with no further comment or observation than is conveyed by the addition of the words "common," "abundant," or "very rare," as the case may be. So wearisome a repetition of names can scarcely prove attractive, we imagine, to any but the keenest insect collector. Whether entomologists will be content to accept Mr. Dale's new species (pp. 264, 290, 293, 304, 306, 308), founded as they appear to be on very inadequate descriptions, and having little but his new names to distinguish them, is more than doubtful.

The more important constituents of this local fauna—the Vertebrata—being treated in a very cursory and imperfect manner, the work can scarcely be said to have much utility for zoologists. The few scraps of interest which it contains may be noted in a few lines. The Marten-cat has been killed at Holnest (p. 27), Daubenton's Bat, or the "Little Black Bat," as it is locally termed, is abundant (p. 28). The Roe-deer is stated (p. 29) to be "rare, but more common in the Middlemarsh Woods. It used formerly to be hunted with Greyhounds." These, it is presumed, must be some of the descendants of the stock turned out, in 1800, by the Earl of Dorchester at Milton Abbey, or by his neighbour,

Mr. Drax. They used to be hunted by Mr. Pleydell, of Whatcombe, with dwarf fox-hounds, and harriers, but we never heard of greyhounds being employed for the purpose. Perhaps on this point Mr. Dale may be mistaken. It is to be regretted that he has not given us a little more information on the subject.

The Kite we are told (p. 31) was formerly common in the parish, and used to breed in the Middlemarsh Woods, but none have been seen for thirty years.

Amongst the Reptilia we do not find any notice of the Smooth Snake, *Coronella lavis*, which has been met with occasionally on the extensive heaths of South-West Hampshire and East Dorset.

Little else calls for remark. The *raison d'être* of this book, if we may judge by its contents, seems to have been a filial and laudable desire on the part of the author, to place on record a list of the large series of British insects in his father's cabinet, that gentleman, who died in 1872, having been an enthusiastic collector. As a monument to his assiduity in that capacity, it no doubt will stand; but it can scarcely be said to add much to our knowledge of the subjects upon which it professes to treat.

A History of British Birds. By the late WILLIAM YARRELL, V.-P.L.S., F.Z.S. Fourth Edition. Revised by ALFRED NEWTON, M.A., F.R.S., Professor of Zoology and Comparative Anatomy in the University of Cambridge. Part XII. October, 1878. Van Voorst, Paternoster Row.

WE have heard it remarked on more than one occasion that British Ornithology is "worked out," and that, whatever may be said of exotic species, as regards the avifauna of Great Britain at least, nothing remains to be discovered or written. A more mistaken idea, however, could not well be conceived, and if any of our readers be disposed to share it, we recommend them to consult the pages of the fourth edition of Yarrell's 'British Birds,' now in course of publication.

A comparison of the material in the present issue with that contained in the third edition will, without any disparagement of the original work, serve, we think, to convince the most sceptical not only of the important additions which are being made to our knowledge on the subject, but also of the amount of work which still remains to be done for want of observers and well-ascertained

facts. On perusing the pages of this new edition, no reflective reader can fail to perceive both the amount of condensed information which it contains, and the many new lines of investigation which it suggests. We can conceive no happier treatment of the subject.

Since our last notice of the work ('Zoologist,' 1877, p. 35) two more parts have appeared, the last, recently issued, making the fourth part of the second volume now in the hands of subscribers. The species therein dealt with are the Rose-coloured Starling, Chough, Raven, Black and Grey Crows, Rook, Daw, and Pie.

In his treatment of the Carrion Crow and the Hooded or Grey Crow, we notice a departure from the usual line adopted by systematists, Prof. Newton considering that these birds "should be regarded as members of a single dimorphic species, and the inability to point out why this species should possess that admittedly exceptional quality is no more an argument against that view than is the inability to explain why a wholly black plumage should prevail in nearly all the species of *Corvus*, while in a few others the black should be varied by grey or white." We have not space here to review the evidence which is adduced in support of the proposed fusion of what have hitherto been usually regarded as two distinct species. Suffice it to say that Professor Newton, arriving at the conviction that "it is almost impossible for a scientific naturalist to retain the time-honoured belief that they are distinct species," unites them under the heading "Crow," and traces very instructively the geographical distribution of the two forms. His remarks on the "*Passeres*" and "*Picariæ*" (pp. 266—268) deserve attentive perusal.

The Popular Science Review. Edited by W. S. DALLAS, F.L.S.,
Assistant Secretary of the Geological Society. 8vo, pp. 446.
With illustrations. London: Hardwicke and Bogue. 1878.

WE have received from the publishers of this quarterly journal the volume for 1878, addressed "To the Editor of 'The Zoologist,'" and presumably therefore intended for notice in these pages under the head of "Notices of New Books." Amongst the zoological papers which it contains we may especially refer to that by Mr. Henry Woodward on Armoured Fishes, and on *Volvox globator*, by Mr. A. W. Bennett. Prof. Martin Duncan's notes on the Ophiurans, or the Sand and Brittle Stars, and

Dr. Wallich's article on the *Radiolaria* contain an amount of interesting information which will amply repay perusal. If our readers will pardon an allusion to our own labours, we may add that the volume before us contains a long essay by the Editor of this journal on the extinct British Wolf. In this article, which occupies nearly fifty pages, the geological and historical evidence of the former existence of the Wolf in the British Islands is fully dealt with, and some curious particulars, extracted from State Papers, Public Records, Privy Council Books, and a variety of other sources, are furnished. "So far as can be now ascertained, it appears that the Wolf became extinct in England during the reign of Henry VII.; that it survived in Scotland until 1743; and that the last of these animals was killed in Ireland, according to Richardson, in 1770, or, according to Sir James Emerson Tennent, subsequently to 1766." For the evidence from which these conclusions are drawn, we must refer our readers to the article in question.

Transactions of the Norfolk and Norwich Naturalists' Society.
Vol. II. Norwich: Fletcher and Son. 1878.

THE fourth part of the second volume of these excellent 'Transactions,' recently issued, deserves special notice, since it contains, amongst other things, a series of twenty-three letters, written between the years 1822 and 1841, by and to such well-known zoologists as Richard Lubbock, Hoy, Girdlestone, Selby, Yarrell, and Robert Hamond, and prefaced by short biographical notices of each. This series is communicated by Mrs. Richard Lubbock and Professor Newton, and will have much value in the eyes of naturalists, not only on account of the many facts thus placed on record, and well worth preserving, concerning the fauna and flora of Norfolk and Suffolk at the time when these letters were written, but also as affording an insight into the pursuits of some of the many earnest naturalists who flourished in the counties above named in the first half of the present century. We might extract many passages from this correspondence which are well worth quoting, but as the part of the 'Transactions' containing it may be had from the Secretary of the Society, or from the Publishers, for a couple of shillings, we recommend our readers to peruse it in its entirety.

